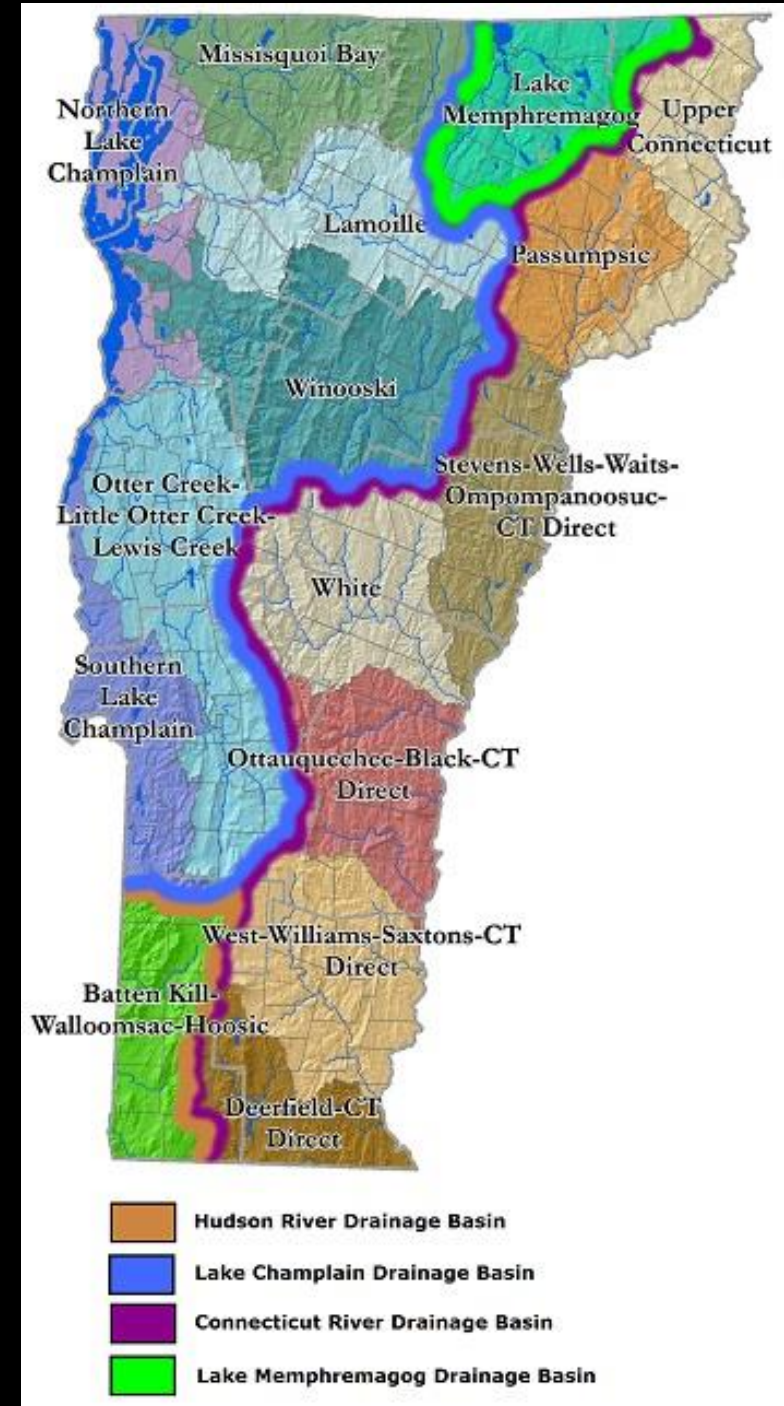


PROGRESS IN TACTICAL BASIN PLANNING – PAST, PRESENT, AND FUTURE

Clean Water Lecture Series - Ethan Swift and Ben Copans, VT DEC Water Investment Division, March 18, 2021

Presentation Overview

- Past: History of Vermont's Previous Basin Planning Efforts
- Vermont's Approach to Tactical Basin Planning
- Present: Regulatory Underpinnings of Basin Planning
- Surface Water Monitoring and Assessment
- Present: Tactical Basin Planning Process and Template
- Present: Watershed Projects Database
- Future: Clean Water Service Delivery Act
- Future: Tracking, Accounting, & Target Setting



Past: History of Vermont's Previous Basin Planning Efforts

AGENCY OF ENVIRONMENTAL CONSERVATION
DEPARTMENT OF WATER RESOURCES
WATER QUALITY DIVISION

POULTNEY-METTAWEE
WATER QUALITY MANAGEMENT PLAN
APRIL 1975



prepared by the
Vermont
Department
of
Water
Resources
Montpelier, Vt.

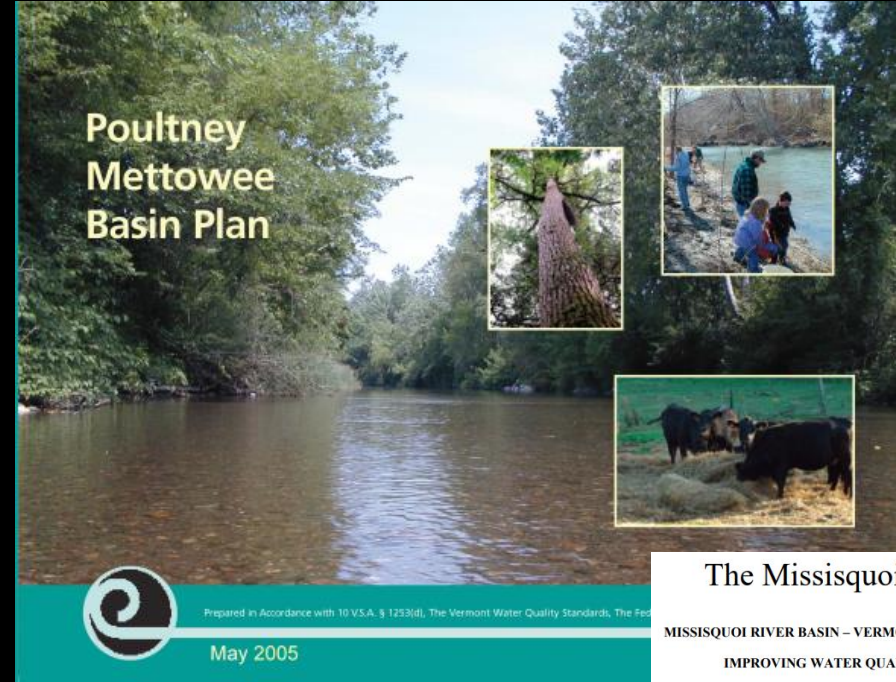
WATERSHED PLAN

For
LOWER LAKE CHAMPLAIN WATERSHED
VERMONT

DEC., 1989



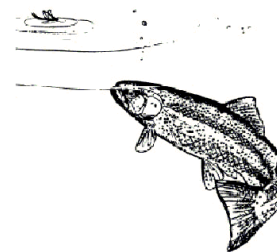
Poultney Mettawee Basin Plan



Prepared in Accordance with 10 V.S.A. § 1253(d), The Vermont Water Quality Standards, The Federal Clean Water Act, and the Vermont Water Quality Standards, The Federal Clean Water Act

May 2005

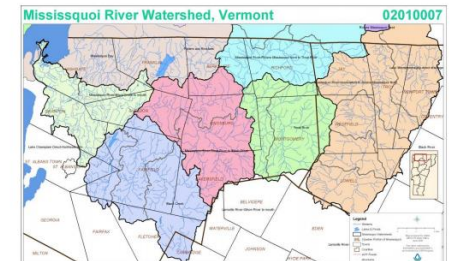
Vermont Watershed Initiative Guidelines for Watershed Planning



Prepared through a collaboration of a public Statewide Watershed Framework Committee
The Vermont Department of Environmental Conservation
Updated 2007

The Missisquoi Areawide Plan

MISSISSQUI RIVER BASIN – VERMONT: A WATERSHED APPROACH TO
IMPROVING WATER QUALITY IN LAKE CHAMPLAIN



An NRCS-Led Partnership Project
to
Develop Strategies for Reducing
Agriculturally-Related
Phosphorus Pollution in Missisquoi Bay

January 22, 2008 Draft

Past: History of Vermont's Previous Basin Planning Efforts

Chapter 4. Tactical Basin Planning: Managing Waters Along a Gradient of Condition

https://dec.vermont.gov/sites/dec/files/documents/wsmd_swms_Chapter_4_Tactical_Basin_Planning.pdf



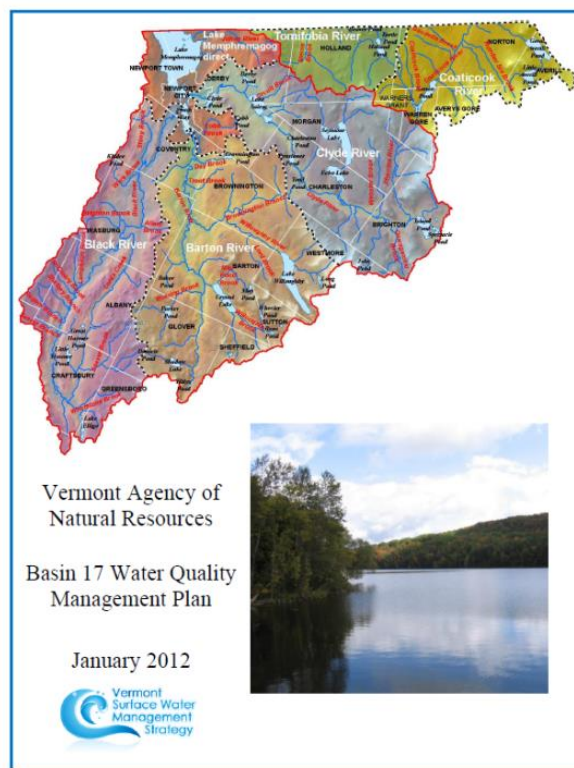
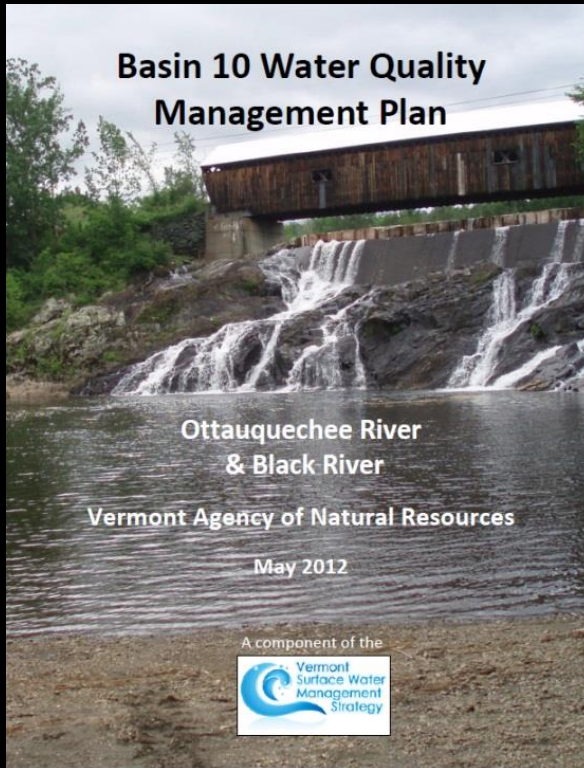
Otter Creek Basin Water Quality Management Plan



May 31, 2012

The Otter Creek Basin - Water Quality Management Plan was prepared in accordance with 10 VSA § 1253(d), the Vermont Water Quality Standards, the Federal Clean Water Act and 40 CFR 130.6.

Basin 10 Water Quality Management Plan



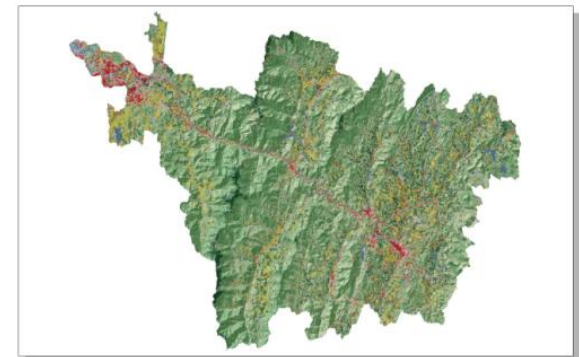
Vermont Agency of
Natural Resources

Basin 17 Water Quality
Management Plan

January 2012



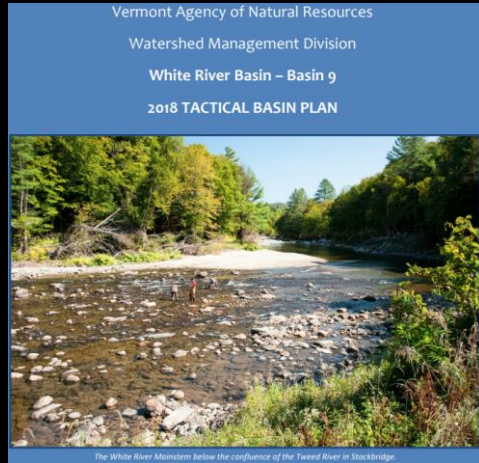
Vermont Agency of Natural Resources Winooski River Basin Water Quality Management Plan



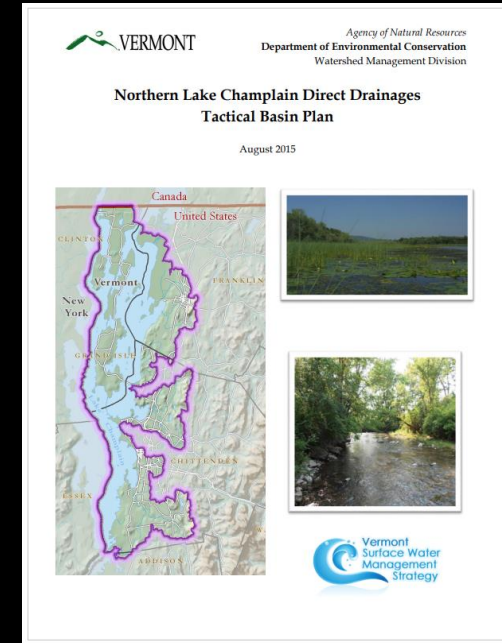
MAY 2012



Past: Tactical Basin Plans developed since 2014



- Northern Champlain Direct (2015, updated 2017)
- West, Williams and Saxtons (2015)
- Batten Kill, Walloomsac, Hoosic (2016)
- Missisquoi (2016)
- Lamoille (2016)
- Memphremagog (2017)
- Winooski (2018)
- White (2018)
- Black/ Ottawaquechee (2018)
- Passumpsic (2019)
- Otter Creek (2019)
- Deerfield, Green, and North Rivers (2020)
- Stevens, Wells, Waits, Ompompanoosuc (2020)

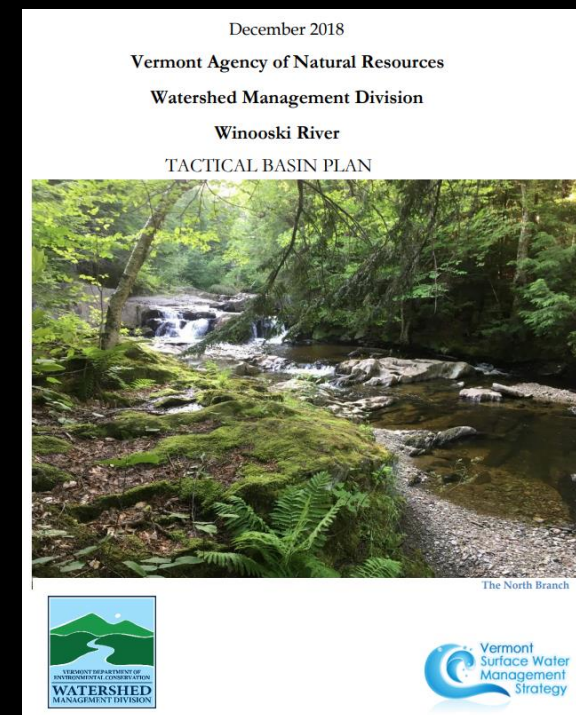
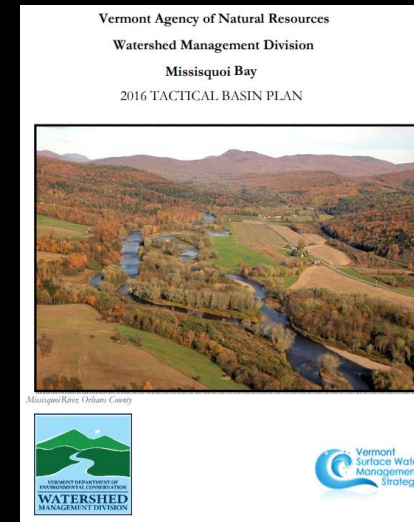
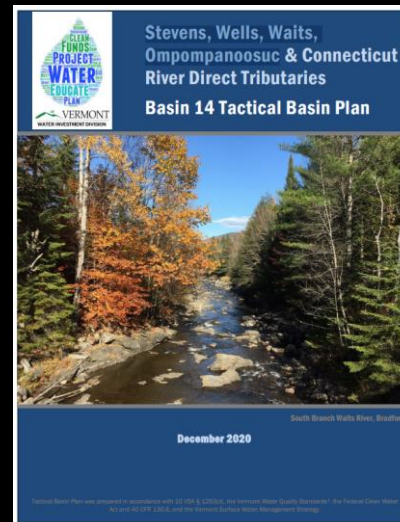
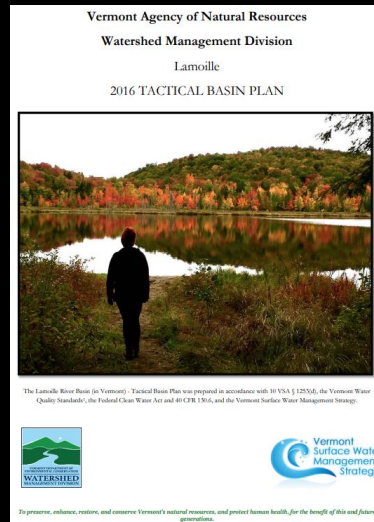


Batten Kill Walloomsac Hoosic



TACTICAL BASIN PLAN

The Hudson River Basin (in Vermont) - Water Quality Management Plan was prepared in accordance with 10 VSA § 125(d), the Vermont Water Quality Standards, the Federal Clean Water Act and 40 CFR 130.6, and the Vermont Surface Water Management Strategy.



Present: VT's Approach to Tactical Basin Planning

Our revised basin planning process – “Tactical Basin Planning” represents subsequent phases of implementation for Vermont's TMDLs, Vermont’s Clean Water Act, and the statewide [Surface Water Management Strategy](#).



This is *not* Tactical Basin Plan implementation

Strategy: What
Tactics: How

Two Types of Implementation:

- Internal and external programmatic coordination to implement regulatory or policy options of statewide scope (e.g., VT’s Clean Water Act of 2016)
- Targeted implementation within each planning basin: “Tactical Basin Planning” (VT’s Clean Water Service Delivery Act of 2019)



Present: Iterative Planning Process

Within Basins,

- Identify the most significant surface water “stressors” and/or impairments based on monitoring and assessment data
- Identify surface waters in “Very High Quality” condition
- Identify priority implementation steps
- Address **legal requirements** for a basin plan
- Define clear roles for partners and stakeholders
- Identify appropriate expectations between the roles of all participants and the **environmental outcomes**

Use an *implementation table* for tracking projects and outcomes and monitoring the commitments of the participants

Employ an adaptive management approach over plan cycles

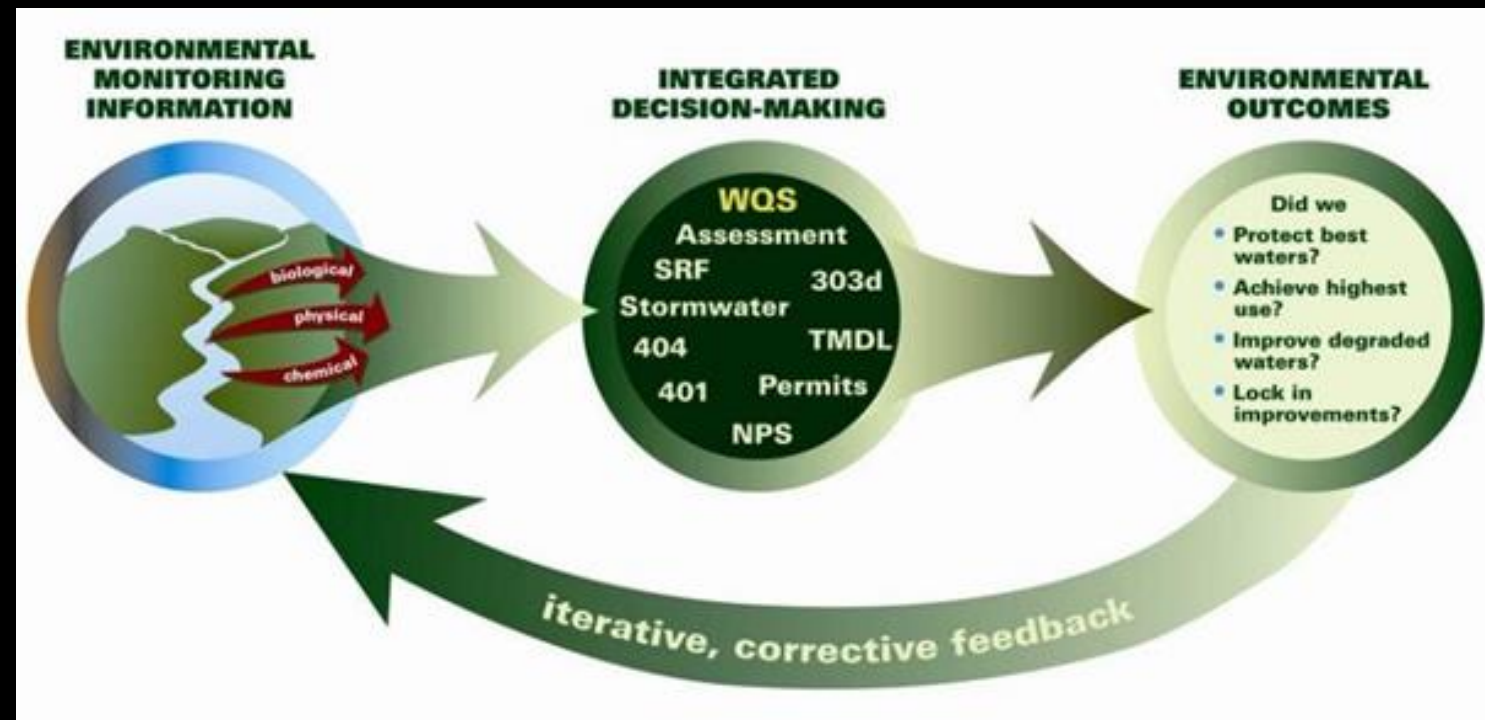


Photo credit: Blaine Hastings

Present: Regulatory Underpinnings of Basin Planning



Federal Water Pollution Control Act of 1972 (Clean Water Act) - 40 CFR 130.6

EPA's 9-elements for Watershed Plans

10 VSA § 1253(d)

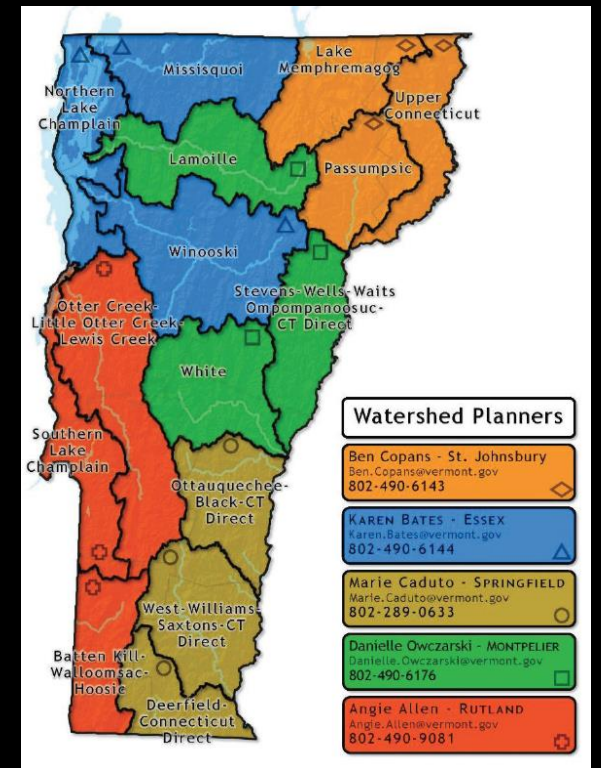
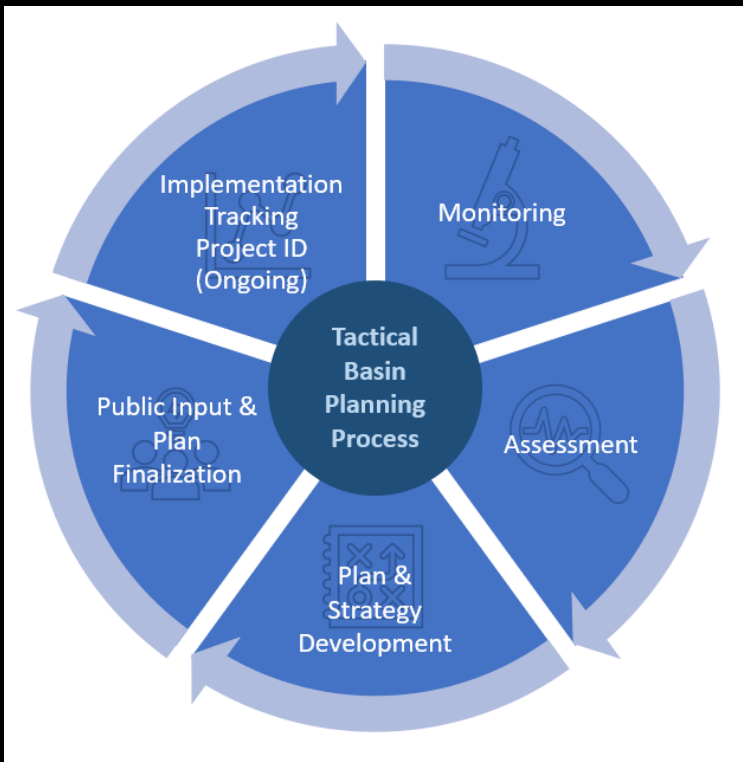
Vermont Water Quality Standards (2017)

Vermont Clean Water Act (Act 64 of 2015)

Vermont's Clean Water Service Delivery (Act 76 of 2019)

TMDL Restoration Plans

Present: BASIN PLANNING



BY THE NUMBERS

15

Planning basins
in Vermont

5

Basin Planners

3

Basins covered by
each planner

1

Tactical Basin
Plan prepared for
each watershed

5

Years between
each plan update

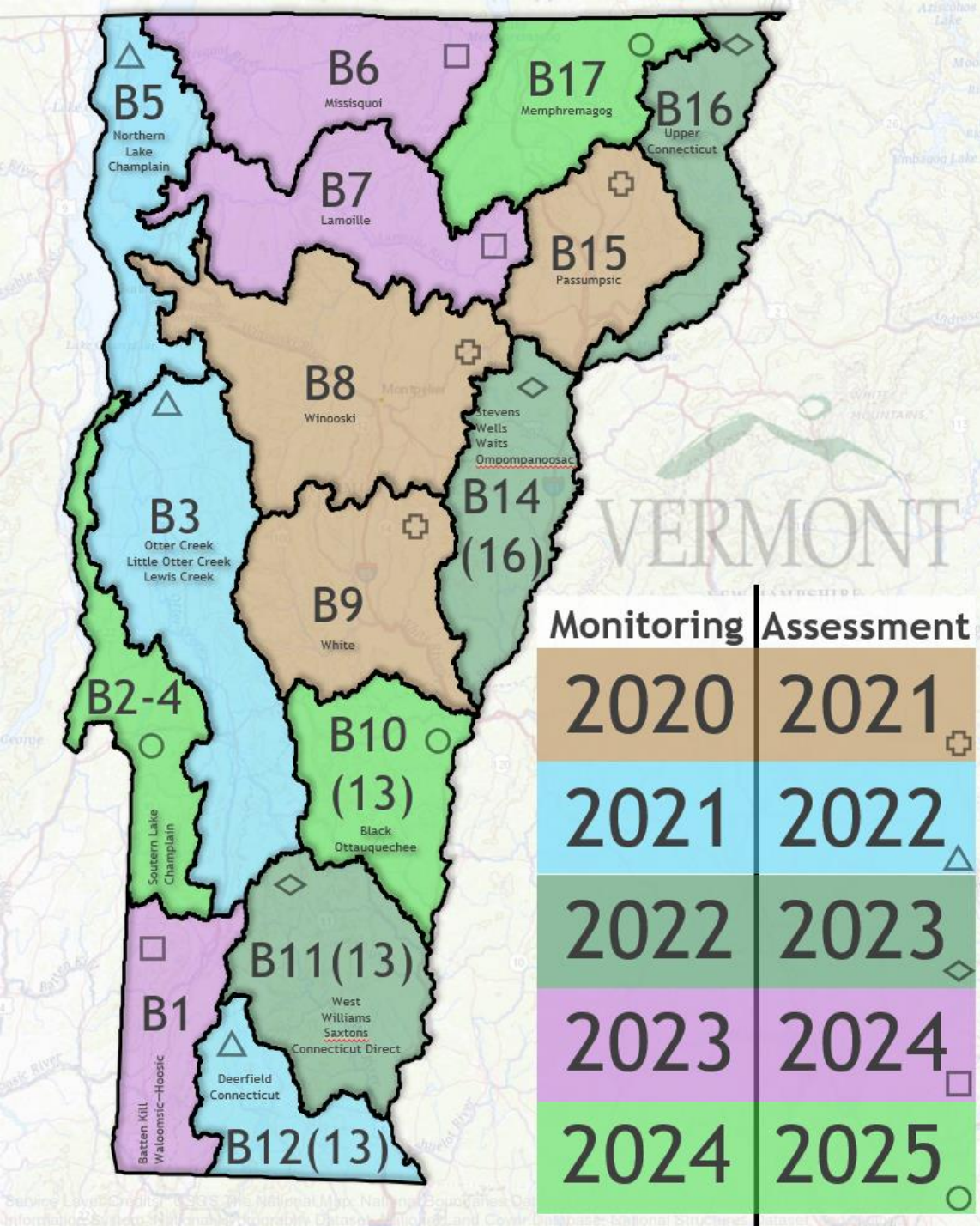
Present: Integrated Watershed Assessment Data



Present: Surface Water Monitoring & Assessment Rotation

The purpose of the Assessment process is to categorize Vermont's surface waters as either as being in "full support," "stressed," "altered," or "impaired" per the designated uses of surface waters.

The four assessment categories and the factors and decision principles applied when evaluating data determine if a water meets the Standards; and the rationale when deciding where and how to list a particular water when not meeting Vermont's Water Quality Standards

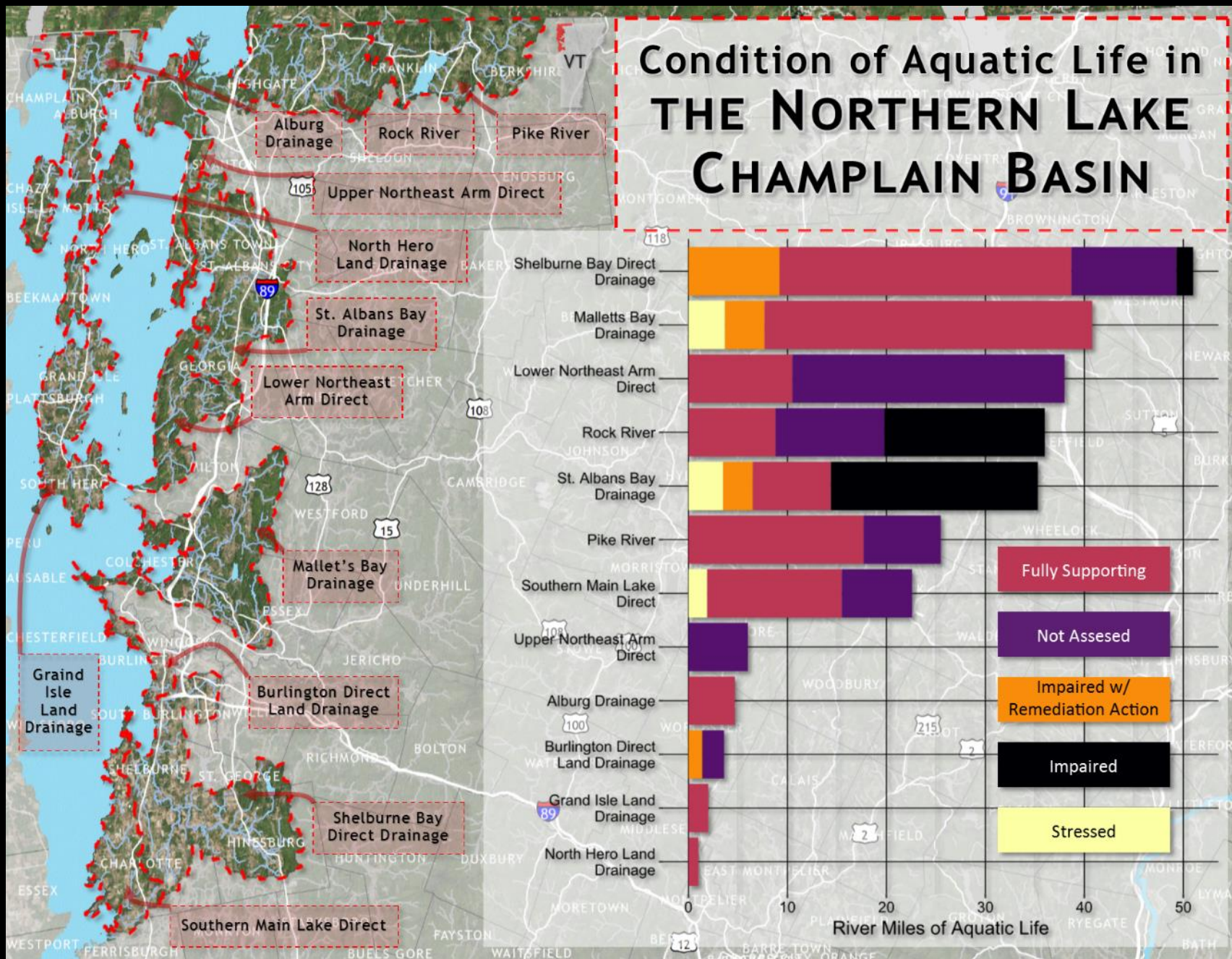


Online Water Quality Data

Access to all online Water Quality Data:



<https://dec.vermont.gov/watershed/map/data>



Designated Uses:

Attainment of aquatic life support (bugs and fish), aquatic habitat, recreation (swimming, fishing, and boating), water supply, irrigation, etc.

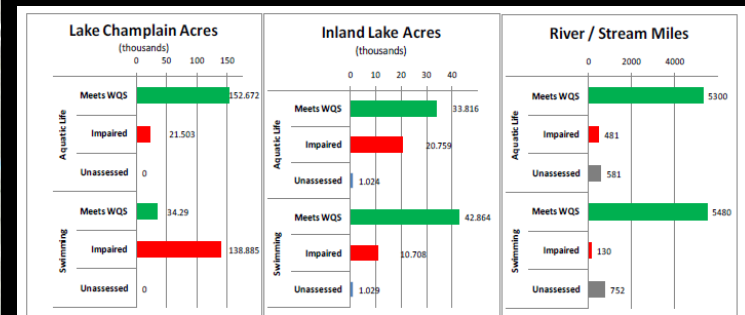
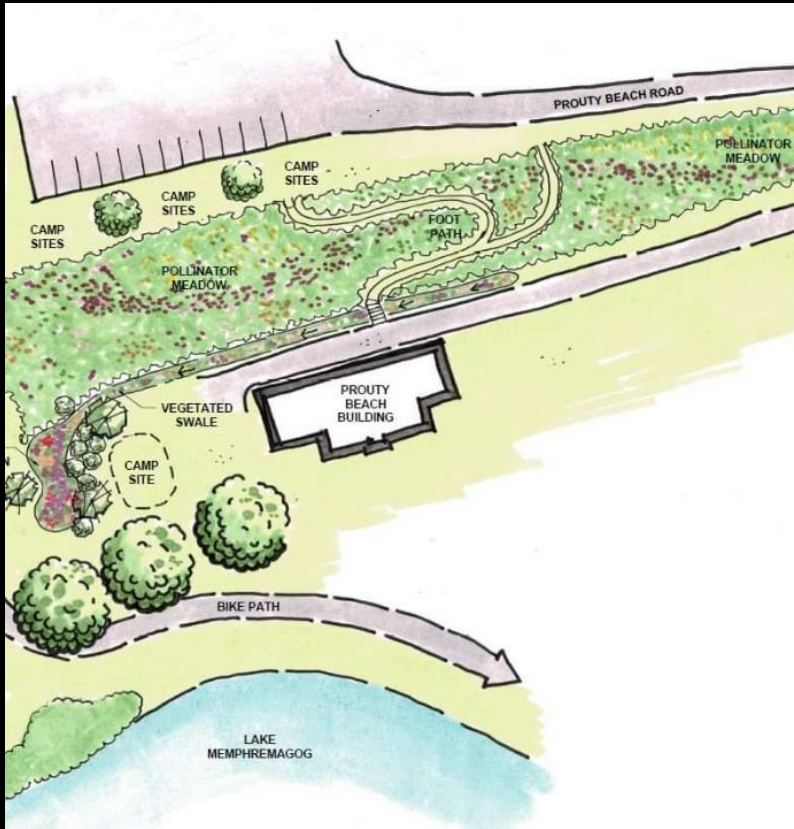


Figure 1. Assessment of Aquatic Life and Swimming Uses in Vermont Lakes and Rivers.



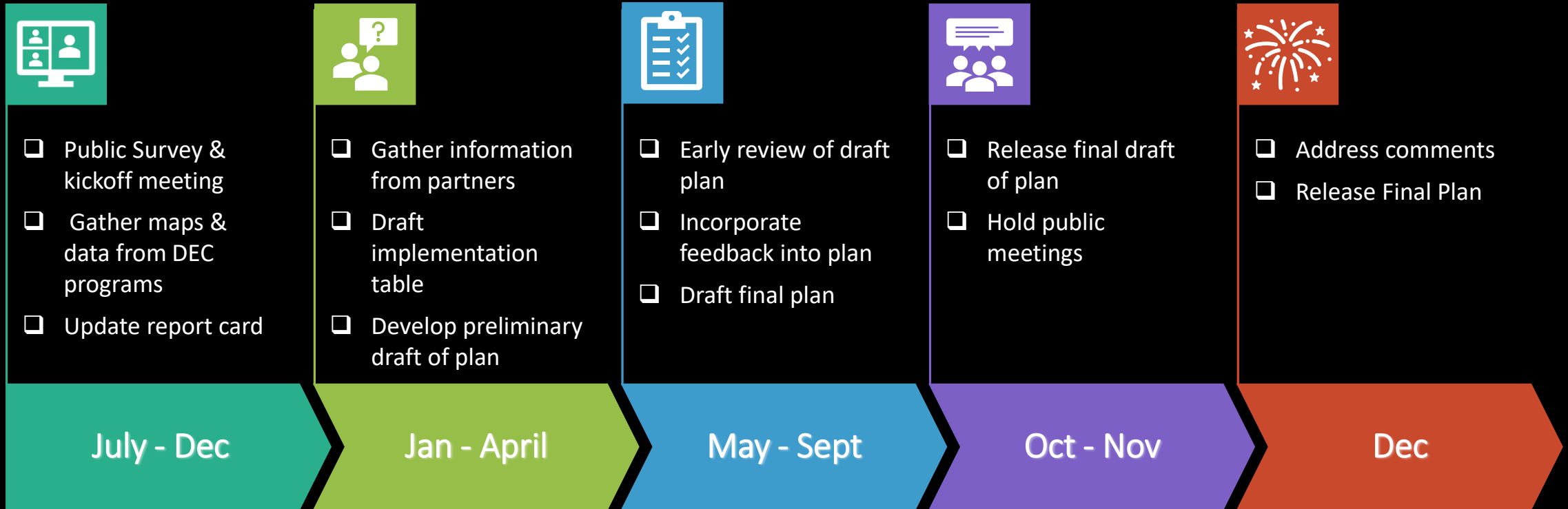
Present: Plan Development Process

Present: Recent changes to the tactical planning process and plans

1. Shortening the planning timeframe from 2+ years to 18 months
2. Funding for watershed groups, conservation districts and regional planning commissions to assist in the planning process
3. Developing a TBP template to improve consistency and efficiency
4. Including a report card on accomplishments from the previous plan
5. Using new tools such as survey and Story Maps to get broader public input and to reach a broader audience
6. Integrating BMP tracking outputs into plans to gauge progress
7. Using the Watershed Project Database to catalogue and track specific projects and to connect these to related strategies in the TBP.



Present: 18 Month Tactical Basin Planning Timeline



Present: TBP template



Chapter 1
• Basin Overview



Chapter 2
• Protection priorities



Chapter 3
• Restoration priorities



Chapter 4
• Strategies by Sector



Chapter 5
• Implementation

1. Basin Overview

2. Protection Priorities

3. Restoration Priorities

4. Strategies by Sector

5. Implementation Table

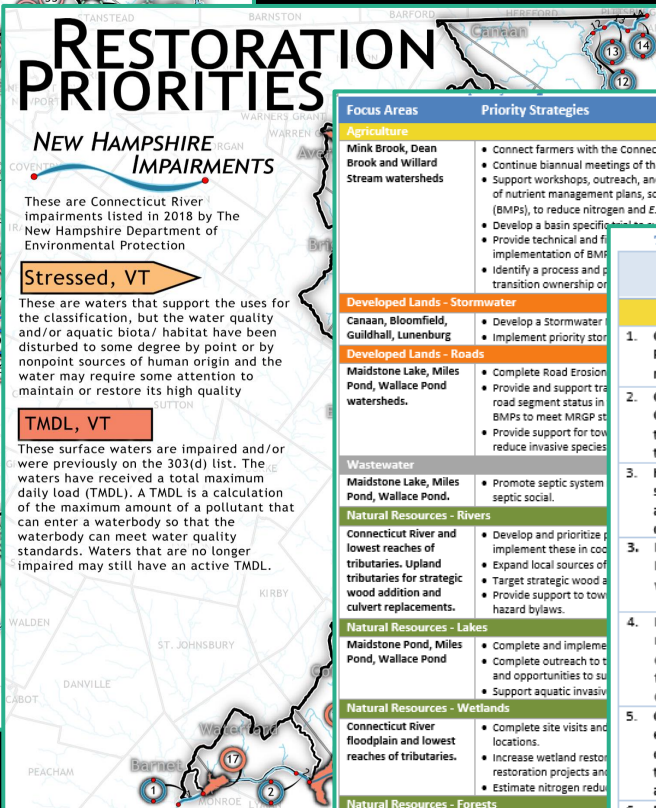
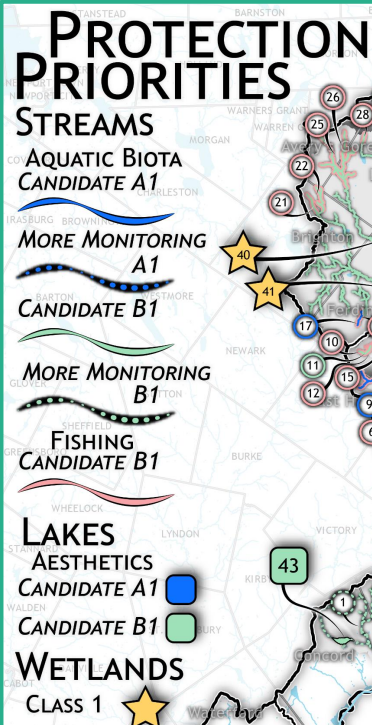
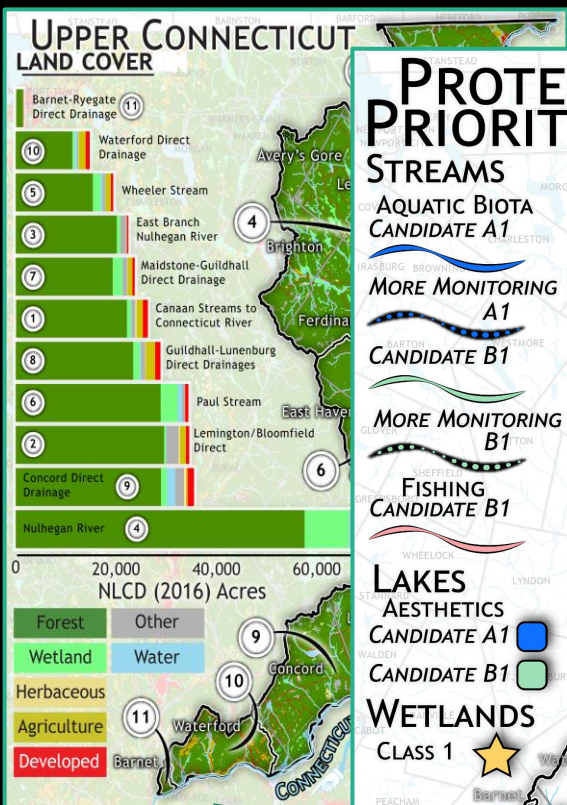
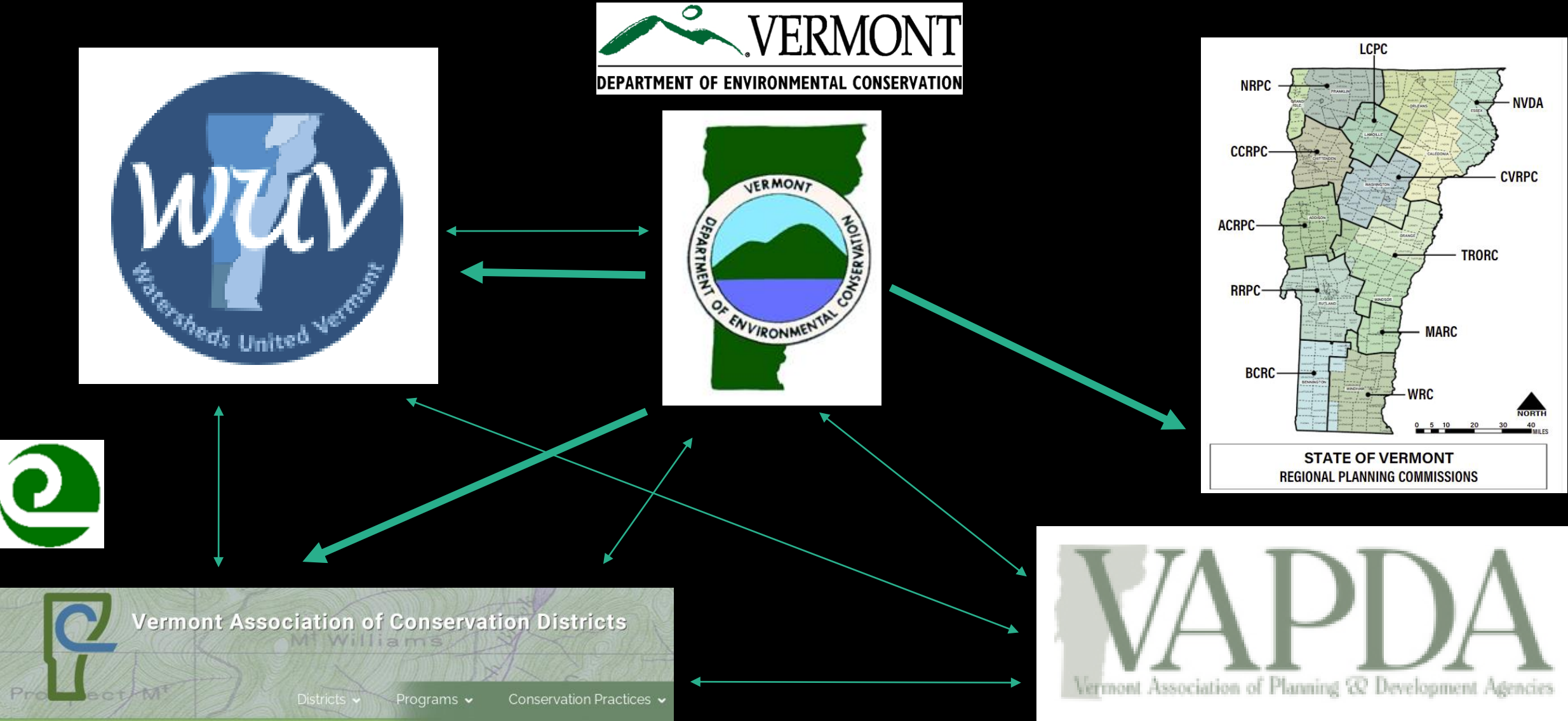


Table 11. Summary implementation strategies for the Basin 16 Tactical Basin Plan. *See list of acronyms on page 71.

Strategy	Priority Area or Watershed	Town(s)	Partner(s)*	Funding*
Strategies to address runoff from Agricultural Lands				
1. Connect basin farmers with the Connecticut River Watershed Farmers Alliance to facilitate information sharing and regional workshops and involvement with this group.	Basin wide	All towns	ECNRCD, CRWFA, UVM Ext., AAFM	ACWIP
2. Continue biannual meetings of the Caledonia and Essex County agricultural workgroup to help coordinate outreach, technical assistance, and financial assistance to farmers in the watershed to address water quality issues.	Basin wide	All towns	ECNRCD, UVM Ext., AAFM, CRC, NRCS	ACWIP, TBPSG
3. Hold annual workshops in the watershed for farmers to share information on field Best Management Practices such as no till and cover cropping, nitrogen application, shorter day corn varieties and use of innovative equipment.	Basin wide	All towns	ECNRCD, CRWFA, UVM Ext., AAFM	ACWIP, FAP
3. Provide technical assistance in updating Nutrient Management Plans for existing farms, including assistance with soil and manure sampling.	Connecticut River floodplain and lowest reaches of tributaries	Canaan, Guildhall, Lemington, Lunenburg, Bloomfield, Maidstone, Brunswick	ECNRCD	ACWIP
4. Provide technical assistance to farmers in the basin that manage large acreages of cultivated cropland to maximize efficiency of nitrogen fertilizer use through preside nitrate testing (PSNT) and corn stalk nitrate testing (CSNT) and developing application recommendations.	Connecticut River floodplain and lowest reaches of tributaries	Canaan, Guildhall, Lemington, Lunenburg, Bloomfield, Maidstone, Brunswick	ECNRCD, UVM Ext., NRCS	ACWIP, LIS FF, RCPP
5. Conduct outreach to farms with cultivated cropland to encourage the use of cover crops by providing information on the availability of state and federal funds for implementing this practice and providing technical assistance to address any limitations farms have implementing this practice.	Mink Brook, Dean Brook and Willard Stream watersheds	Canaan, Guildhall, Lemington, Maidstone	ECNRCD, UVM Ext., NRCS, AAFM	ACWIP, LIS FF, RCPP
6. Develop a basin specific trial to support the advancement of inter seeding through either diversified cover crops and/or shorter day corn.	Connecticut River floodplain and lowest reaches of tributaries	Canaan, Guildhall, Lemington, Lunenburg, Bloomfield, Maidstone, Brunswick	ECNRCD, UVM Ext., NRCS	ACWIP, LIS FF, NRCS - CIG
7. Provide technical and financial support to farmers to acquire equipment necessary for effective implementation of Best Management Practices such as cover cropping and no/min tillage.	Connecticut River floodplain and lowest reaches of tributaries.	Canaan, Guildhall, Lemington, Lunenburg, Bloomfield, Maidstone, Brunswick	ECNRCD, UVM Ext., NRCS	CEAP, VHCB, ACWIP

Present: Statutory Partners in the TBP Process



Present: Initial Community Outreach

DRAFT -Improving the Health of the Missisquoi Bay Watershed

The Vermont Agency of Natural Resources' planning with Partners for Continued Success

MAPP WSMD | November 15, 2020

Lamoille River Watershed Survey (Basin 7)

English (United States) ▼

The Vermont Agency of Natural Resources is in the process of developing the 5-year update for the Lamoille Tactical Basin Plan.

We are asking for your feedback in this survey to better understand your knowledge, concerns, and activities in relation to water quality in the Lamoille River Basin (Basin 7) both locally and watershed wide.

Tactical Basin Plans (TBP) are strategic guidebooks for improving watershed health. They identify surface waters in need of restoration and protection, outline a list of actions to achieve water quality goals, and identify partners and funding critical to implementing the actions.

The 2021 Lamoille TBP will also include the Phase 3 Implementation Plan to reduce nutrient pollution (phosphorus) into Lake Champlain.

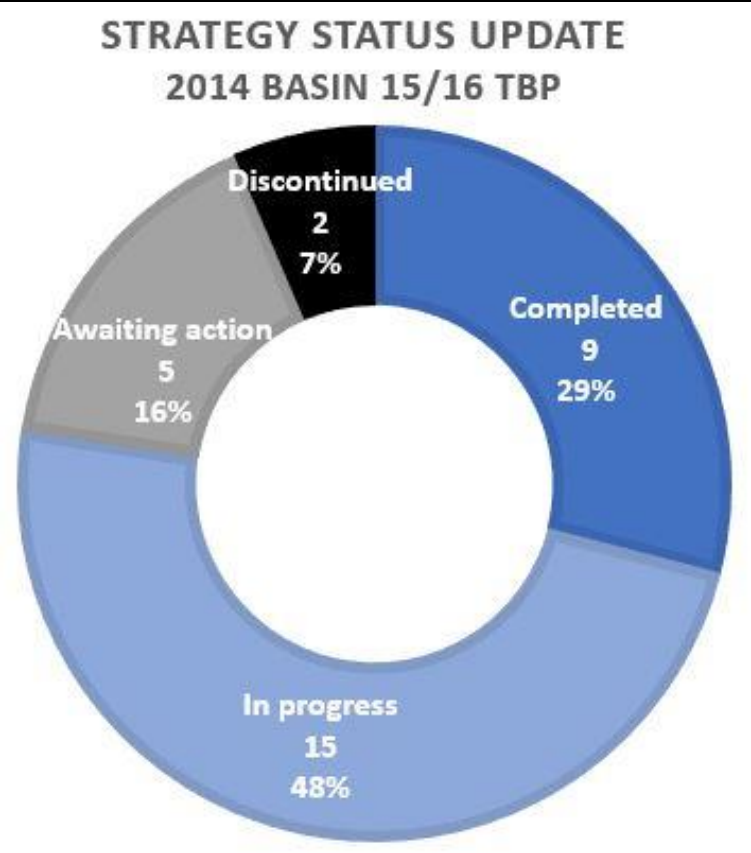
This survey can take anywhere from 10 to 30 minutes based on the level of detail you provide for the questions.

* Required

Tactical Basin Planning & the TMDL (2 Questions)



Present: Tactical Basin Plan Report Card



Activities to do at Dennis Pond:

- Hunting
- Bird watching
- Fishing
- Hiking through the woods
- Walking with your dog

The wetland complex is dominated by softwood swamp community types including, Northern White Cedar Swamps, Black Spruce Swamps and Black Spruce Woodland Bog.

Dennis Pond

Dennis Pond is a natural wetland area south of Dennis Pond Rd in Brunswick, VT

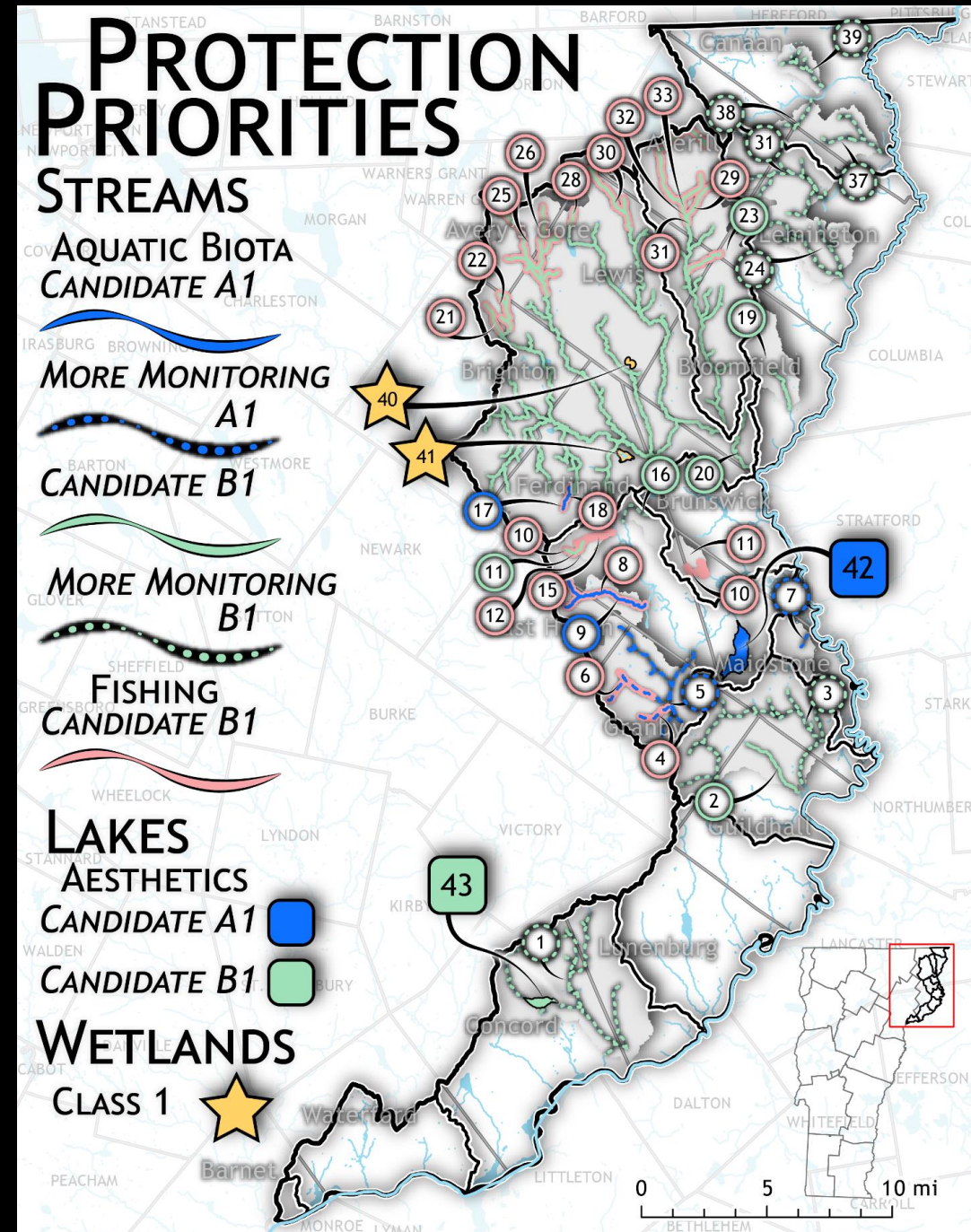
Table A1. 2014 Basin 16 report card with 2020 updates from local, state, and federal watershed partners.						
Action from 2014 TBP	Lead/Key Players	Funding	Priority	Objective	Status	Update/ Recommendation for 2020 TBP
ANR recommends that the Nulhegan River, Washburn Brook be considered as candidates for reclassification to Class A(1) waters.	ANR/Conte Refuge, Friends of the Nulhegan		Top 10	Protection of high quality waters	Awaiting action	With additional data Washburn Brook is now meets B(1) criteria along with much of the Nulhegan River watershed.
Petition for the reclassification of Mud and Dennis Pond wetlands as Class 1 Wetlands.	DEC/ FWD, TNC, Consultants		Top 10.	Protection of high quality waters	Completed	Wetlands have been reclassified as a Class 1 Wetland.
Collect additional information on Moose and Yellow Bogs to determine if reclassification is appropriate.	DEC/Conte Refuge, Friends of the Nulhegan, Consultants		High	Protection of high-quality waters	Completed	In Wetlands program completed an assessment and determined that these do have exceptional functions and values and so are potential Class 1 wetlands.

Present: Protection Priorities

TBP's include an assessment of water quality data to identify waters that meet criteria for:

A(1), A(2), B(1), B(2) water classifications

- Across the uses of:
 - Public Water Supply
 - Fishing Use
 - Aquatic Biota and/or Habitat
 - Aesthetics (lakes)
- Class 1 Wetlands
- Outstanding Resource Waters



Present: Restoration Priorities

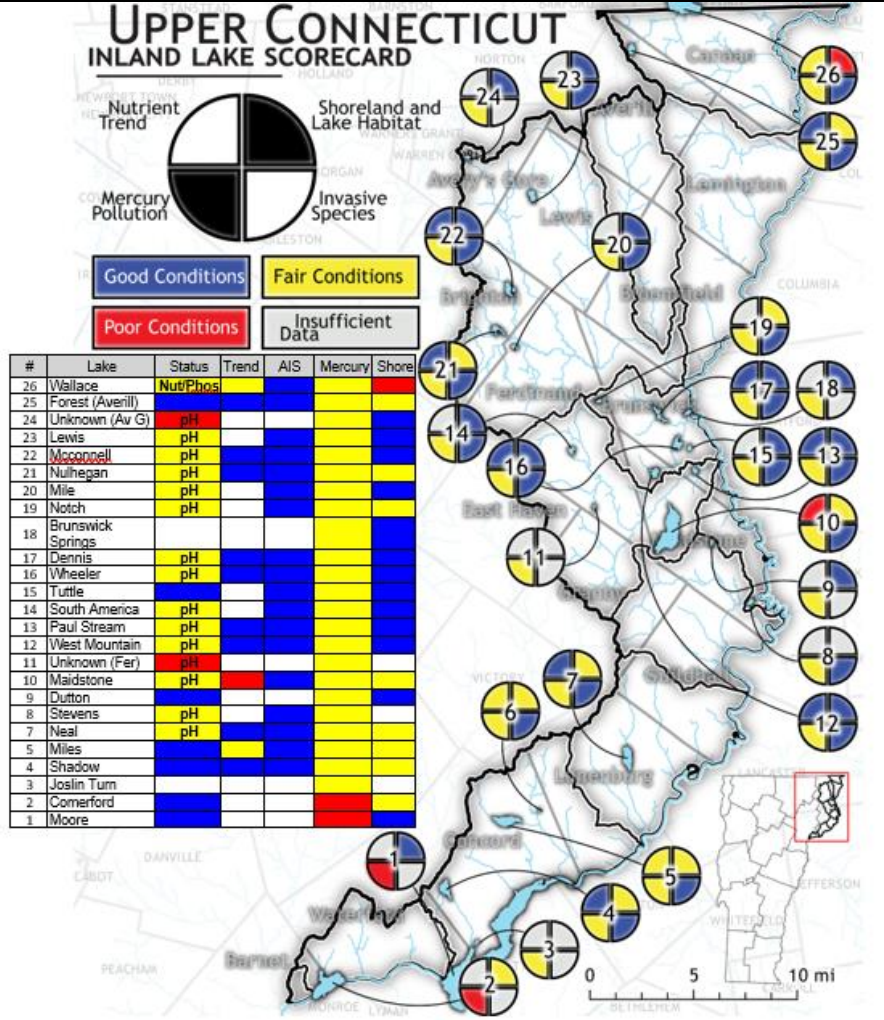
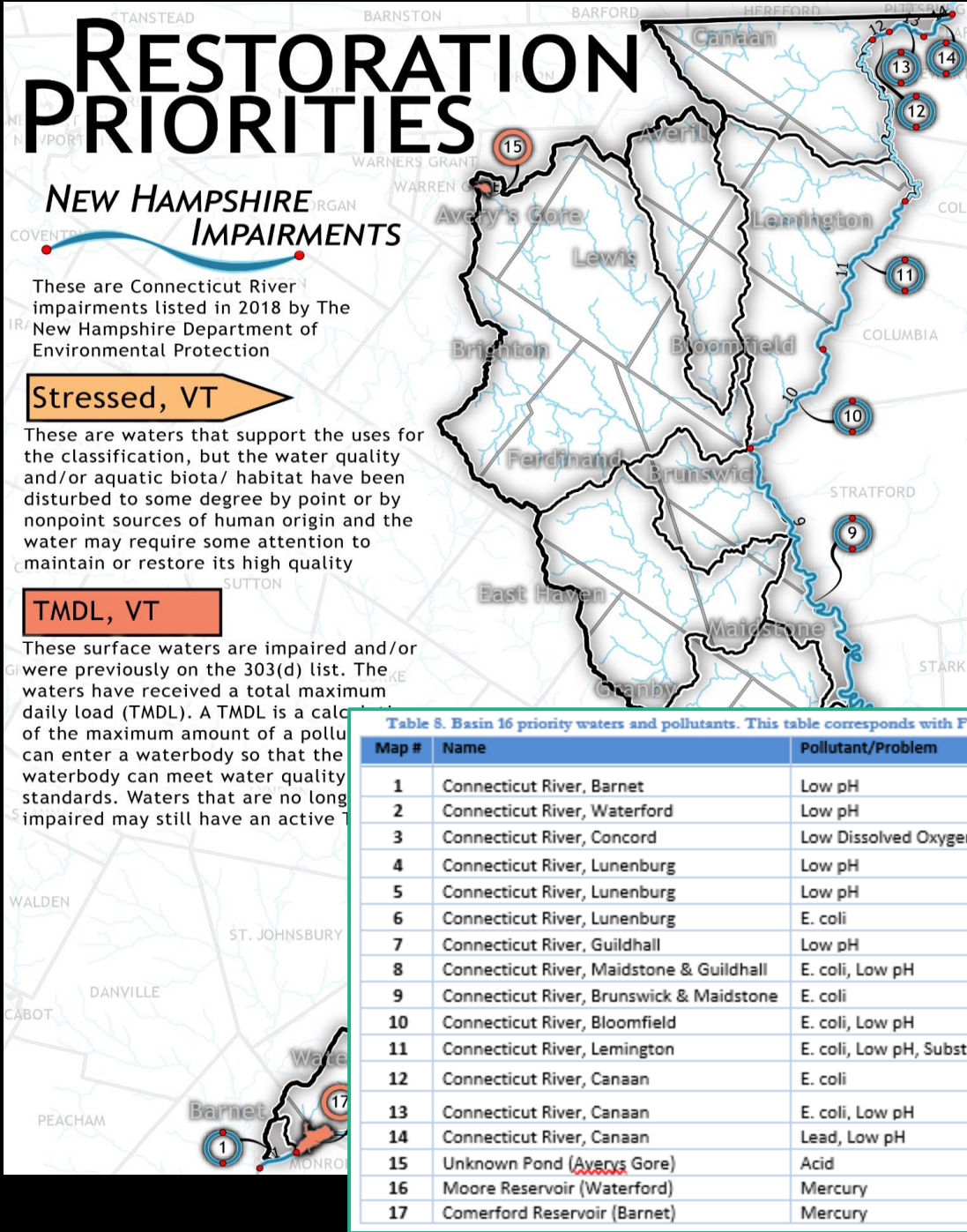


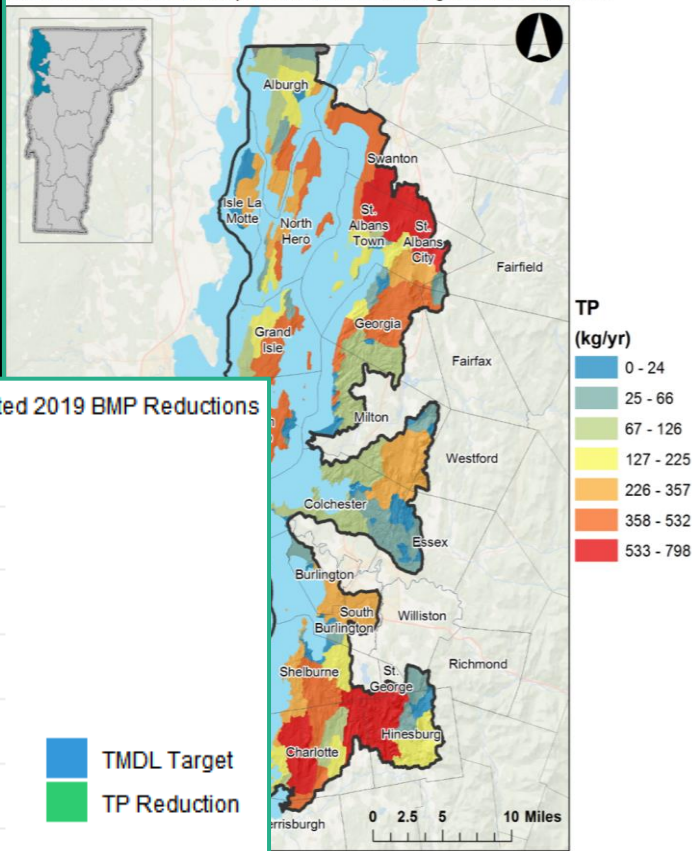
Figure 8. Scorecard information for lakes and ponds in Basin 16.



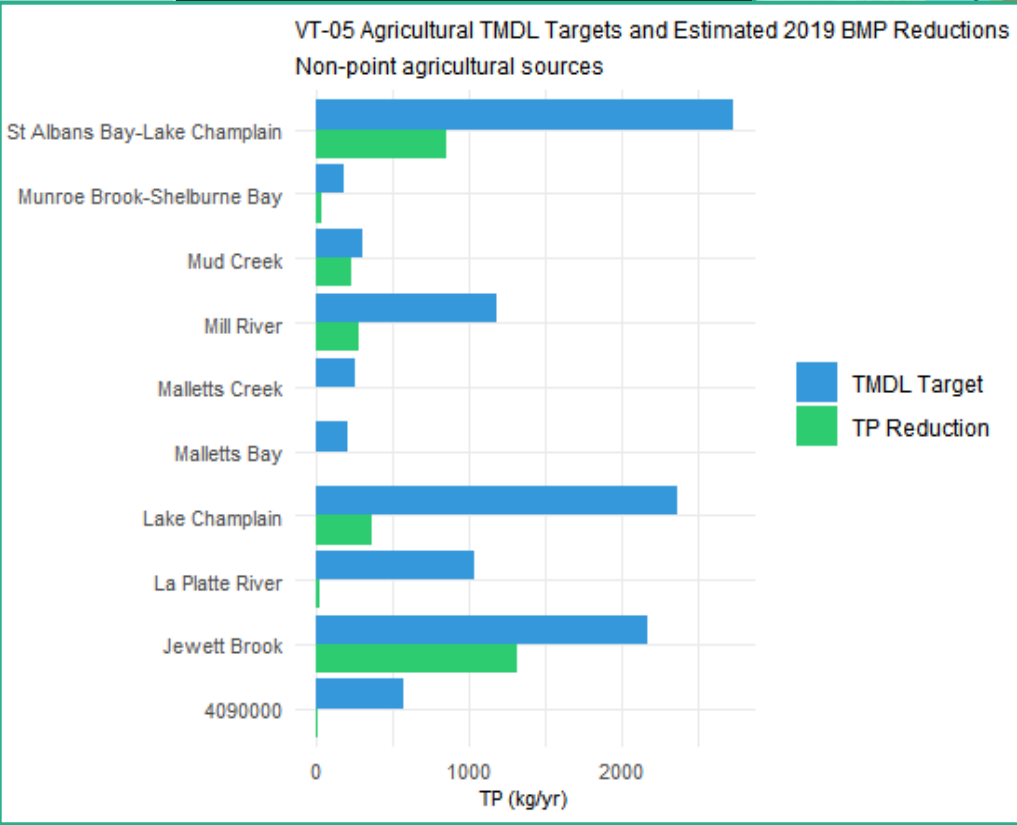
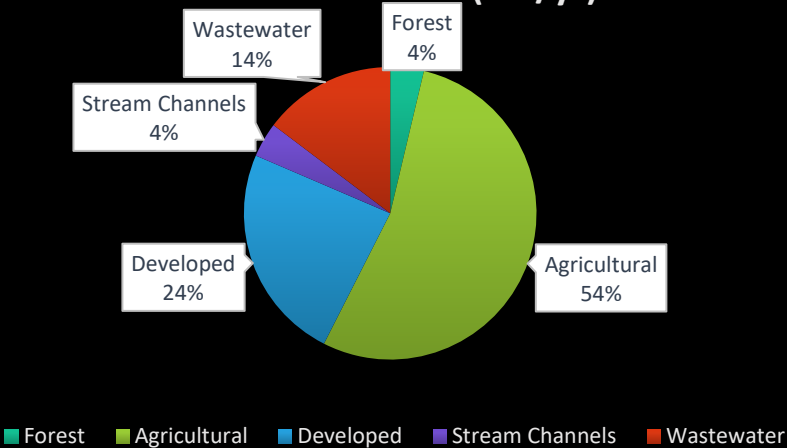
Present: Lake Champlain Phosphorus TMDL and other TMDLs

Source	Category	Allocation Category	Total Watershed TP (MT/yr)	Average TMDL % Reduction	Required TMDL TP Reduction (MT/yr)
Forest	All Lands	Load	2.8	5.0%	0.1
Agricultural	Crop and Pasture	Load	40.0	25.9%	11.0
	Farm	Wasteload	0.6	80.0%	0.5
Developed	Developed Lands	Wasteload	18.1	17.8%	3.1
	Paved Road	Wasteload			
	Unpaved Road	Wasteload			
Stream Channels	All Streams	Load	2.9	51.6%	1.5
Wastewater	WWTF Discharges	Wasteload	10.2	57.5%	5.8
	CSO Discharges ²	Wasteload	0.9	11.8%	0.1

Estimated Total TMDL Reduction
Reductions based on developed lands, farmsteads, agriculture, and forests

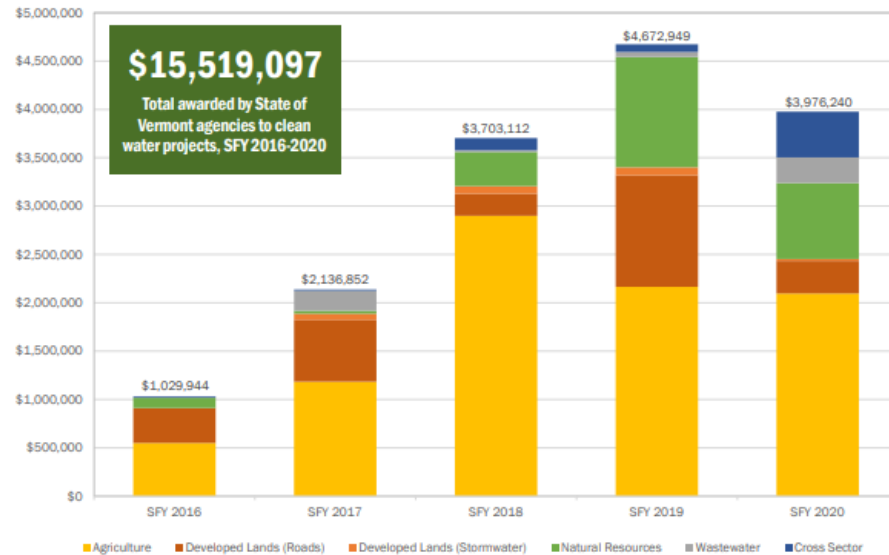


Total Watershed Phosphorus Loading By Source in the North Lake Basin (MT/yr)



Present: TBP's are organized by sectors which align with the clean water reporting framework

Dollars awarded by State of Vermont agencies to clean water projects in the Missisquoi Bay watershed, by sector and state fiscal year (SFY).



Agriculture

- Conservation practices that reduce sources of pollution from farm production areas and farm fields.



Developed Lands--Stormwater

- Practices that reduce or treat polluted stormwater runoff from developed lands, such as parking lots, sidewalks, and rooftops.



Developed Lands--Roads

- Stormwater and roadside erosion control practices that prevent erosion and treat road-related sources of pollution.



Wastewater

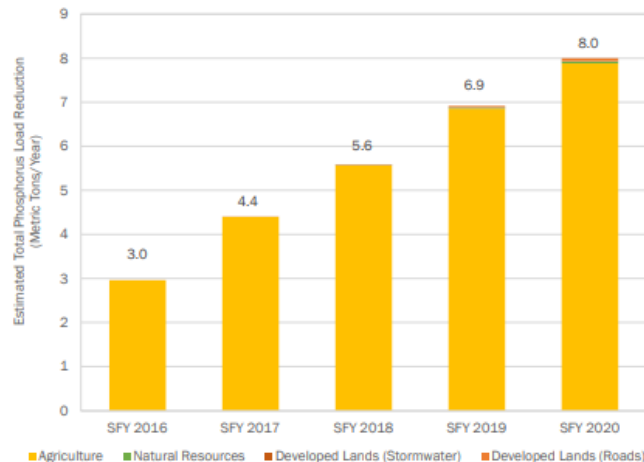
- Improvements to municipal wastewater infrastructure that decrease pollution from municipal wastewater systems through treatment upgrades, combined sewer overflow (CSO) abatement, and refurbishment of aging infrastructure.



Natural Resources

- Restoration of "natural infrastructure" functions that prevent and abate pollution. Natural infrastructure includes: floodplains, river channels, lakeshores, wetlands, and forest lands.

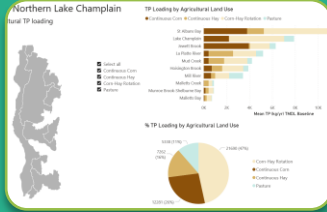
Annual estimated total phosphorus load reductions (metric tons per year) of clean water projects funded by State of Vermont and federal partners, SFY 2016-2020, by sector, in the Missisquoi Bay watershed. Note: Does not include estimated total phosphorus load reductions of projects funded, but not yet completed.





Present: Agricultural Tactical Basin Planning Process

Months
0 – 7



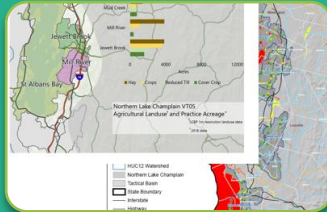
1. Data Collection & Compilation (DEC/AAFM)

- Identify Ag water quality hot spots
- Quantify State, NRCS, and farmer BMPs and load reductions
- Collect Ag census data – CSFO reporting
- Determine P reduction targets for TMDL basins

Outcomes

- Maps/Graphs of Ag water quality hot spots
- Maps/Graphs of farms & BMPs
- Ag load reductions vs. TMDL Targets

Months
8 – 12



2. Ag Partners* Meeting(s) (NRCD)

- Review data and update with Ag partner input
- Discuss current Ag implementation efforts
- Identify/discuss gaps in meeting Ag water quality targets
- Develop draft strategies to address gaps with Ag partners

Outcomes

- Targeted strategies to address gaps and identify partners/funding
- Draft Ag section reviewed by Ag partners

Months
12 – 18



3. Review of Draft Plan (DEC/AAFM)

- Internal review by AAFM and DEC staff
- Release draft plan for 30-day public comment
- Hold public meetings – Target farmer group if one exists
- Produce Responsiveness Summary

Outcome

- Final plan and Responsiveness Summary published

Months
18 – 60



4. Plan Implementation (All Ag partners*)

- Ag partners use TBP to guide work and funding in the basin
- Ag partners meet annually on progress and coordination
- Tracking of Ag implementation efforts and load reductions

Outcomes

- Coordinated approach to implementing & tracking Ag strategies to meet targets
- Annual review of Ag basin plan strategies to assess progress and identify challenges

*Ag. partners: AAFM, NRCS, DEC, UVM ext, NRCD

Present: Power BI - <https://tinyurl.com/yabo7wa2>

1. Data Collection & Compilation (DEC/AAFM)

- Identify Ag water quality hot spots
- Quantify State, NRCS, and farmer BMPs and load reductions
- Collect Ag census data – CSFO reporting
- Determine P reduction targets for TMDL basins



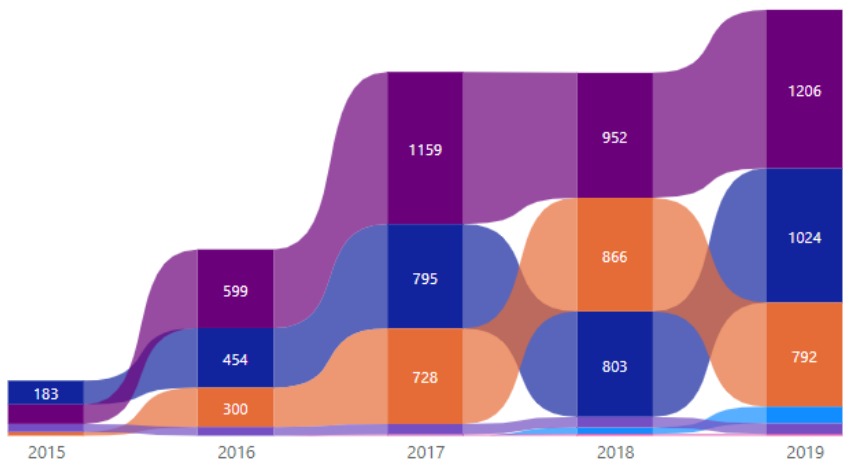
Outcomes

- Maps/Graphs of Ag water quality hot spots
- Maps/Graphs of farms & BMPs
- Ag load reductions vs. TMDL Targets

Agricultural TP Reduction

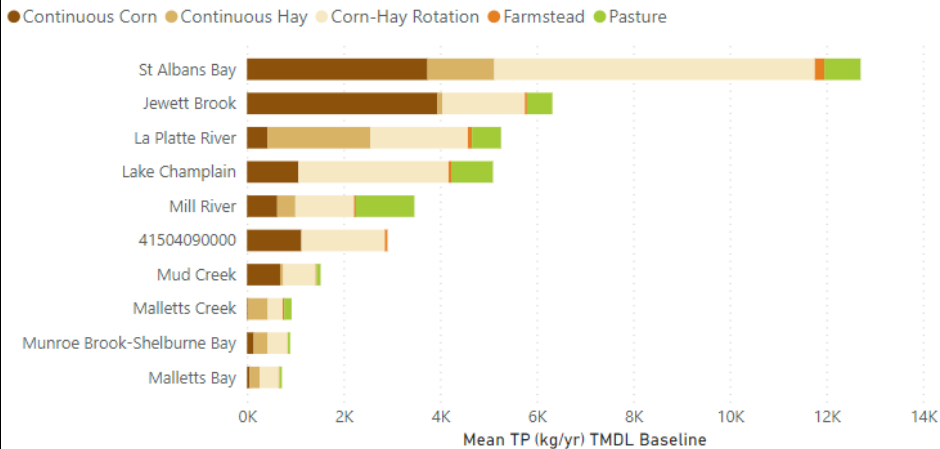


TP Reduction by Year and Agricultural Practice

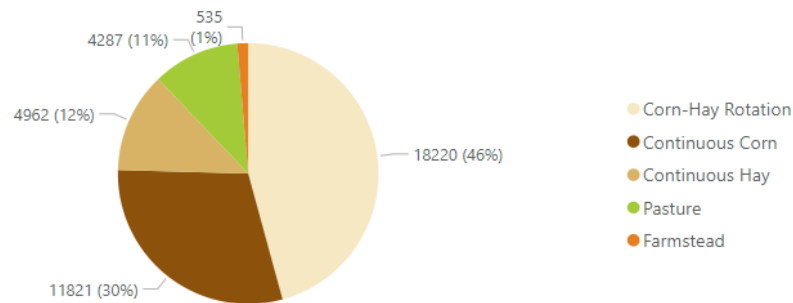


BMP Type	2015	2016	2017	2018	2019
Barneyard Management	0	0	0	48	129
Conservation Crop Rotation	183	454	795	803	1,024
Conservation Tillage	29	300	728	866	792
Cover Crop	148	599	1,159	952	1,206
Fencing Livestock Exclusion	0	0	11	14	14
Riparian Buffer	61	66	78	81	80
Total	420	1,419	2,771	2,765	3,245

TP Loading by Agricultural Land Use



% TP Loading by Agricultural Land Use



Present: Partner engagement to develop and refine strategies

2. Ag Partners* Meeting(s) (NRCD)

- Review data and update with Ag partner input
- Discuss current Ag implementation efforts
- Identify/discuss gaps in meeting Ag water quality targets
- Develop draft strategies to address gaps with Ag partners



Outcomes

- Targeted strategies to address gaps and identify partners/funding
- Draft Ag section reviewed by Ag partners



Present: Internal and public review process

3. Review of Draft Plan (DEC/AAFM)

- Internal review by AAFM and DEC staff
- Release draft plan for 30-day public comment
- Hold public meetings – Target farmer group if one exists
- Produce Responsiveness Summary



Outcome

- Final plan and Responsiveness Summary published

What is a Basin? What is a Tactical Basin Plan? Why should I care? Tell Me About Basin 16 What have we accomplished? What should be protected? What should be restored? What are the major strategies?



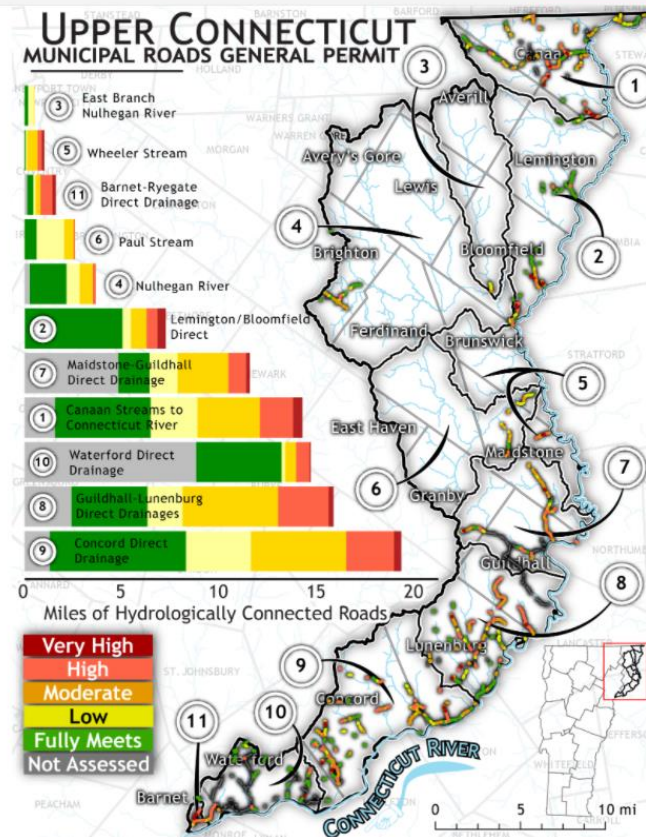
Story Map

Roads

The priority strategies identified in the Draft Basin 16 TBP are:

- Complete Road Erosion Inventories (REIs) and implement BMPs on high priority road segments.
- Provide and support training for road crews on using REI results to prioritize projects, to update road segment status in the MRGP database as well as the installation and maintenance of road BMPs to meet MRGP standards.
- Provide support for towns to apply for better roads grants, shared hydroseeder program, and to reduce invasive species spread.

The accompanying map displays road segments and



Upper Connecticut River Direct Tributaries

Basin 16 Tactical Basin Plan



Connecticut River, Maidstone Vermont

January 2021 | Draft for public Review

Tactical Basin Plan was prepared in accordance with 10 VSA § 1253(d), the Vermont Water Quality Standards, the Federal Clean Water Act and 40 CFR 135.6, and the Vermont Surface Water Management Strategy.

Present: Plan implementation

4. Plan Implementation (All Ag partners*)

- Ag partners use TBP to guide work and funding in the basin
- Ag partners meet annually on progress and coordination
- Tracking of Ag implementation efforts and load reductions



Outcomes

- Coordinated approach to implementing & tracking Ag strategies to meet targets
- Annual review of Ag basin plan strategies to access progress and identify challenges

VERMONT CLEAN WATER INITIATIVE 2020 PERFORMANCE REPORT



AGENCY OF ADMINISTRATION
AGENCY OF AGRICULTURE, FOOD & MARKETS
AGENCY OF COMMERCE & COMMUNITY DEVELOPMENT
AGENCY OF NATURAL RESOURCES
AGENCY OF TRANSPORTATION

Lake Memphremagog Watershed Results

State-Funded Project Outputs:

Results of clean water projects funded by State of Vermont agencies completed, SFY 2016-2020, by sector, in the Lake Memphremagog watershed. Note: Does not include results of projects funded, but not yet completed.



STATE AGRICULTURE PROJECT OUTPUTS	2016	2017	2018	2019	2020	TOTAL
Acres of agricultural land treated by conservation practices	650	146	2,209	903	2,863	6,771
Acres of agricultural land treated by forest and grass buffers	-	-	20	-	-	20
Acres of pasture with livestock excluded from surface waters	-	-	-	-	-	-
Number of barnyard and production area practices installed	7	2	5	17	12	43
Acres of water quality protections within newly conserved agricultural lands	-	-	-	6	-	6
Estimated acres of agricultural land treated through equipment	-	-	22	549	719	1,290
Acres of agricultural conservation practices reported through technical assistance	-	-	-	-	-	-

PROBLEM:

The Morin farm is in the town of Holland within the Stearns Brook watershed. Stearns Brook flows northeasterly and is listed on the VT Dept of Environmental Conservation 2016 stressed waters list for agricultural and gravel road runoff and morphological instability. Stearns Brook drains to Quebec's Lake Massawippi which has elevated levels of phosphorus.

The coordination efforts of Orleans County Natural Resources Conservation District (NRCDC) and other partners focused efforts have improved water quality conditions by implementing best management practices throughout the watershed.

Elevated levels of phosphorus in the unnamed waterway that runs through the Morin farm were discovered by the Orleans County Conservation District through the LaRosa Volunteer Water Quality Monitoring program. Samples were collected 8 times per year including 2 rain events in 2017, 2018 and 2019 at two locations, above and below the farm.

PROJECT HIGHLIGHTS:

Andre Morin bought his 116-acre home farm from his parents in 1992, who had purchased it in 1984. In 2016, he started working with the Vermont Land Trust and the Vermont Housing & Conservation Board to place a permanent conservation easement on his farm.

As part of the easement agreements Andre agreed to address all Required Agricultural Practices (RAPs) including addressing the herd management practices of a heavy use production area adjacent the waterway. With assistance from Orleans County NRCDC staff he has discontinued the practice of feeding in paddocks adjacent to the waterway and allowing livestock access along the waterway.

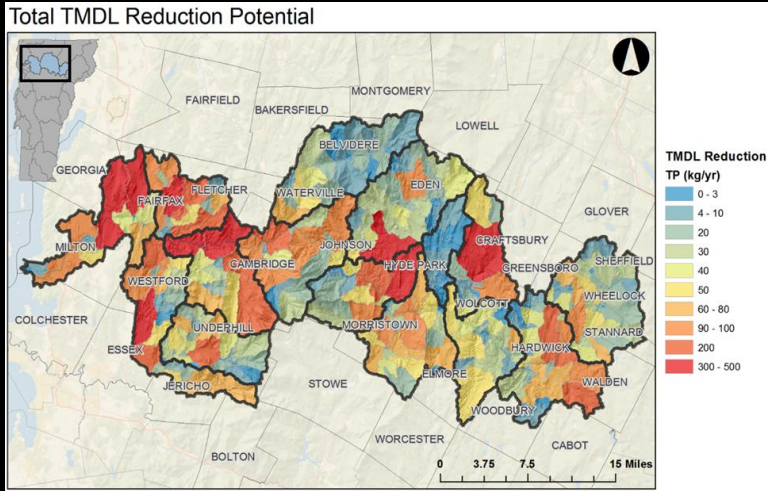
In 2019 Andre completed a new heavy use area barn yard project with funding from the VT Agency of Agriculture, Food and Markets' Best Management Practices program. He also installed exclusion fencing, alternative watering, stream crossings and laneway projects with funding from the Orleans County NRCDC USDA Regional Conservation Partnership Program to bring the farm into compliance with the RAPs.

Andre said, "The project improved the farm because the cows are out of the mud, there is more room to feed in one place, it is easier to maintain, it helps my manure management, it looks a lot nicer and the work benefits the local waters because the cows are not going in the stream whenever they want." He sold his cows in the winter of 2020 because of his personal health limitations but his brother John will continue to use the facilities, pastures and crop fields.

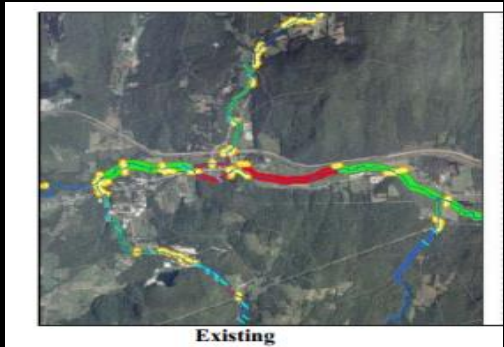


For additional information contact:
VTDEC Watershed Coordinator, Ben Cowan 802 751 2830
Orleans County NRCDC Manager, Sarah Darnell 802 334 6090 x 7008

Present: Compile and Integrate Sector Based Assessments to inform Project Identification and Prioritization



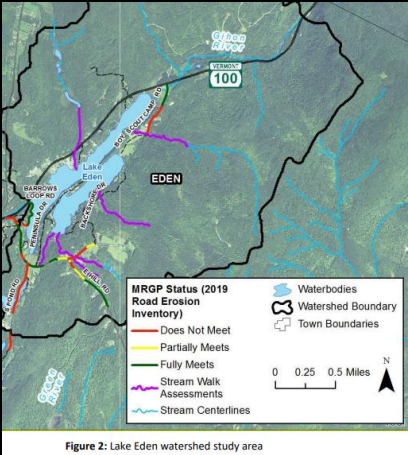
Stream Geomorphic Condition



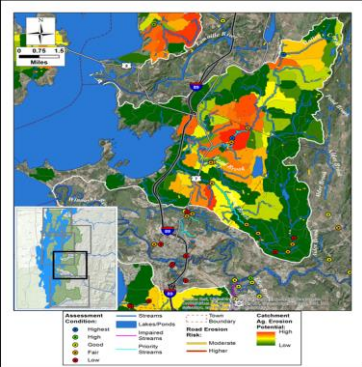
Town Zoning and Corridor Protection



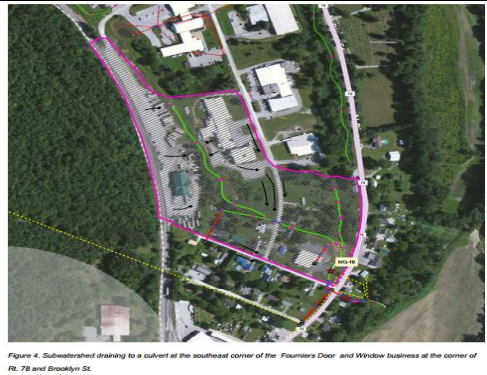
Lake Watershed Action plan



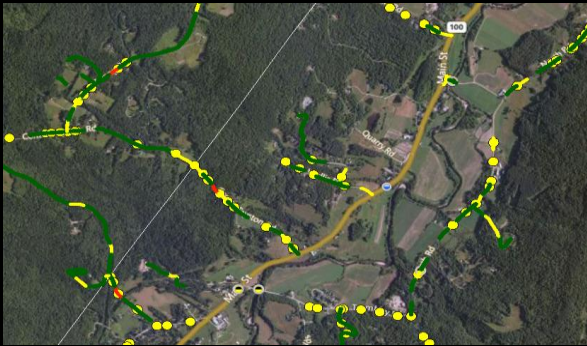
Agricultural Assessments



Stormwater Master Planning



Road Inventory and Erosion Risk



Present: Strategies in the implementation table relate to projects in the Watershed Project Database

Strategy	Priority Area or Watershed	Town(s)	Partner(s)*	Funding*
Strategies to support Natural Resource Protection and Restoration - Lakes				
34. Complete a Lake Watershed Action plan for Maidstone Lake that addresses shoreland areas, roads and Maidstone State Park, building off previous Lake Wise assessments, design and implementation efforts.	Maidstone Lake Watershed	Maidstone	DEC, ECNRCD, Maidstone Lake Association, Town of Maidstone, VFPR	ERP, TBPSG, Watershed Grant
35. Design and implement projects identified through Lake Wise assessments and through the Lake Watershed Action Plan for Maidstone Lake.	Maidstone Lake Watershed	Maidstone	DEC, ECNRCD, Maidstone Lake Association, Town of Maidstone, VFPR	ERP, TBPSG, Watershed Grant
36. Complete outreach to the Miles and Wallace Pond communities around increasing nutrient trends and opportunities to support Lake Wise assessments and implementation or the development of a Lake Watershed Action if there is local support.	Miles and Wallace Ponds	Concord, Canaan	DEC, ECNRCD, Miles Pond Association	TBPSG

Clean Water Project Explorer <<

Project Status

Potential Projects

Projects In Progress

Completed Projects

Keyword

Sector

Step

Type

Agency

County

☐ Include Multi County Projects

Town

Basin

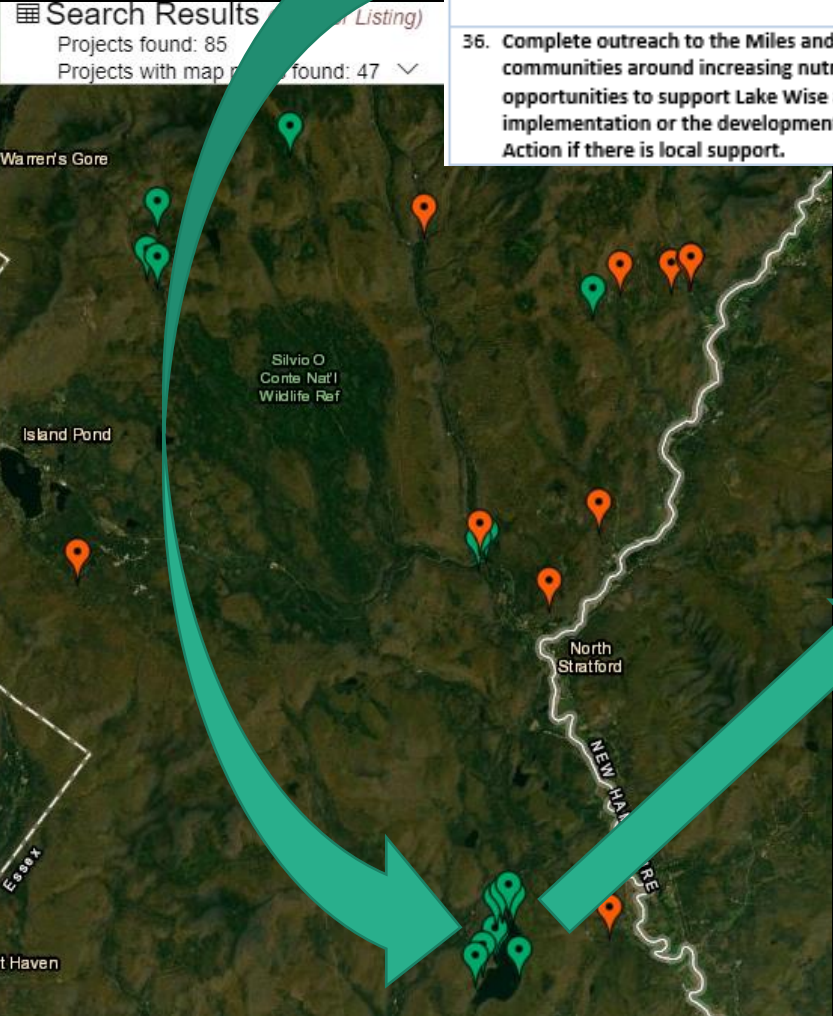
Northern Connecticut

☒ Include Multi Basin Projects

WPD ID

Search

Clear



Maidstone Lake Lakeshore restoration project - Ingerson

Potential Project

WPD ID: 2212

Project Type: Lake Shoreland - Final Design

County: Essex

Basin: Northern Connecticut

Maidstone Lake Sediment Control project - Mazzonna

Potential Project

WPD ID: 2213

Project Type: Lake Shoreland - Final Design

County: Essex

Basin: Northern Connecticut

Maidstone Lake Bank Stabilization project - Reed

Potential Project

WPD ID: 2214

Project Type: Lake Shoreland - Final Design

County: Essex

Basin: Northern Connecticut

Maidstone Lake Bank Stabilization project - Reed Implementation

Potential Project

WPD ID: 9817

Project Type: Lake Shoreland - Implementation

County: Essex

Basin: Northern Connecticut

Present: Identifying High Priority Clean Water Projects for Implementation

<https://anrweb.vt.gov/DEC/cleanWaterDashboard/>

Step 1 – Project Identification

Step 2 – Project Design


Step 3 – Project Implementation

Watershed Projects Database

AGENCY OF NATURAL RESOURCES
CLEAN WATER PORTAL


HOME PROJECT EXPLORER WPD SEARCH SCREENING TOOL FUNDING OPPORTUNITIES STP CALCULATOR ANR DEC FPR F

Clean Water Portal




Clean Water Interactive Dashboard

New in 2021, the Clean Water Interactive Dashboard (CWID) is a data visualization tool, built using Microsoft Power BI, that allows users to explore statewide data on clean water investments, project outputs, estimated pollutant load reductions, and more. Specifically, individuals can examine statewide data on clean water investments, project outputs, estimated pollutant load reductions, and more.




Clean Water Project Explorer

The Clean Water Projects Explorer is an interactive application that displays clean water project information, including funding, project status, and more. Users can download individual project reports. The Explorer complements the [Vermont Clean Water Initiative 2020 Performance Report](#), co-developed by the Agency of Natural Resources and the Vermont Department of Environmental Conservation, and lists development identified through Tactical Basin Planning and listed in the Watershed Projects Database (WPD).




Watershed Project Database Search

The Watershed Projects Database Search is a publicly accessible search interface for the Watershed Project Database (WPD), which contains information on projects identified through Tactical Basin Planning.



Water Quality Project Screening Tool

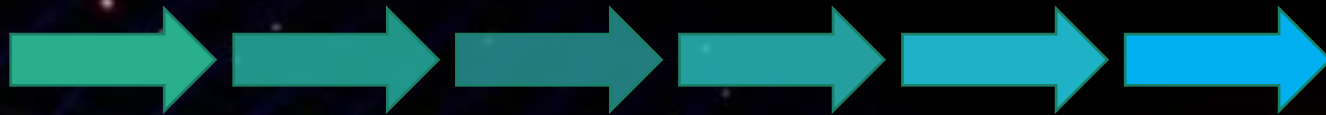
Enter a discrete project location to determine a project's basin and sub-basin, as well as the regulatory and non-regulatory program requirements for the project.



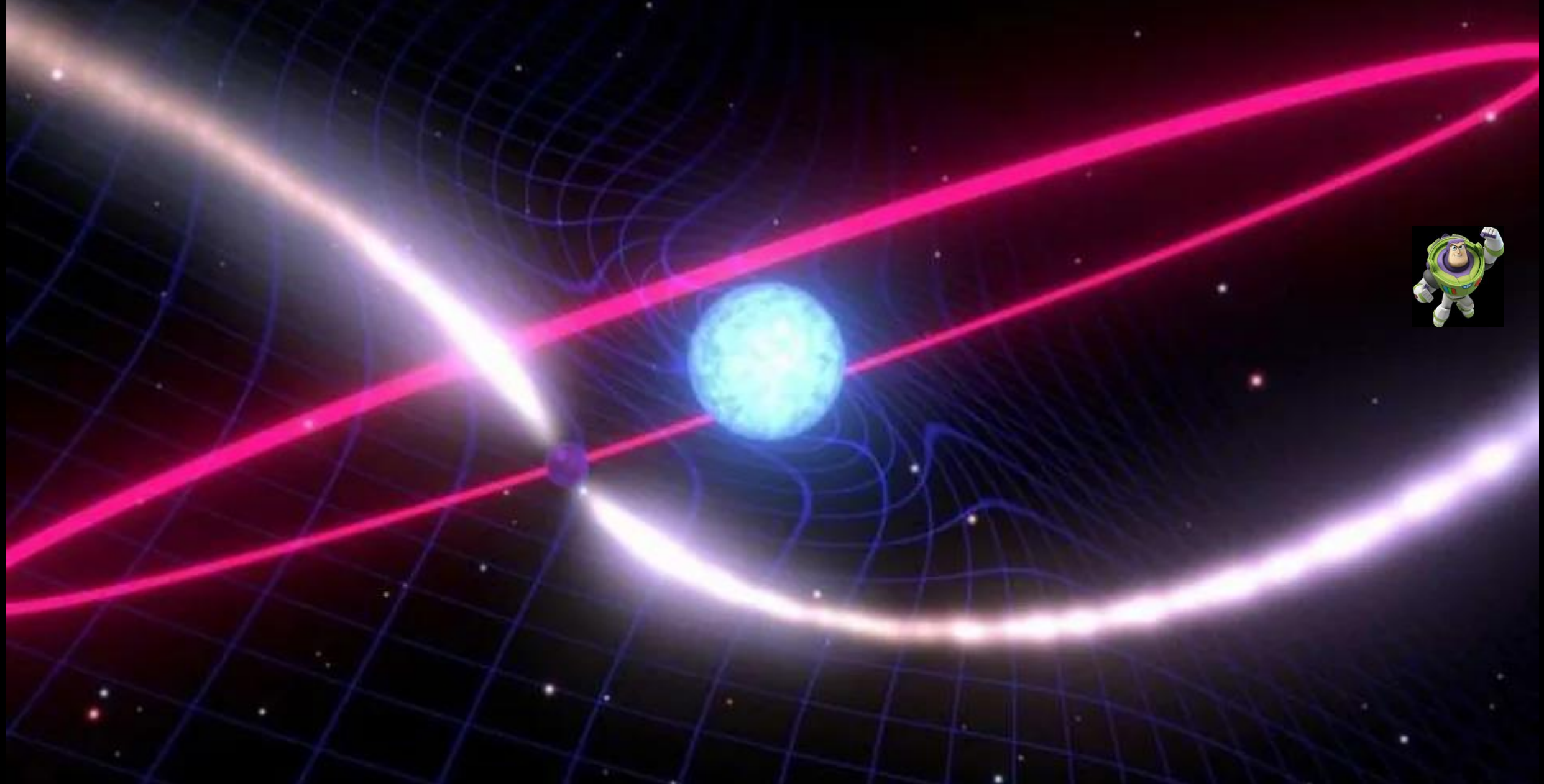
Funding Opportunities Tool

The Funding Opportunities Tool provides information on anticipated clean water funding opportunities, across State of Vermont and federal agencies' ability to report changes. Please reach out to the project contact for the most current information.

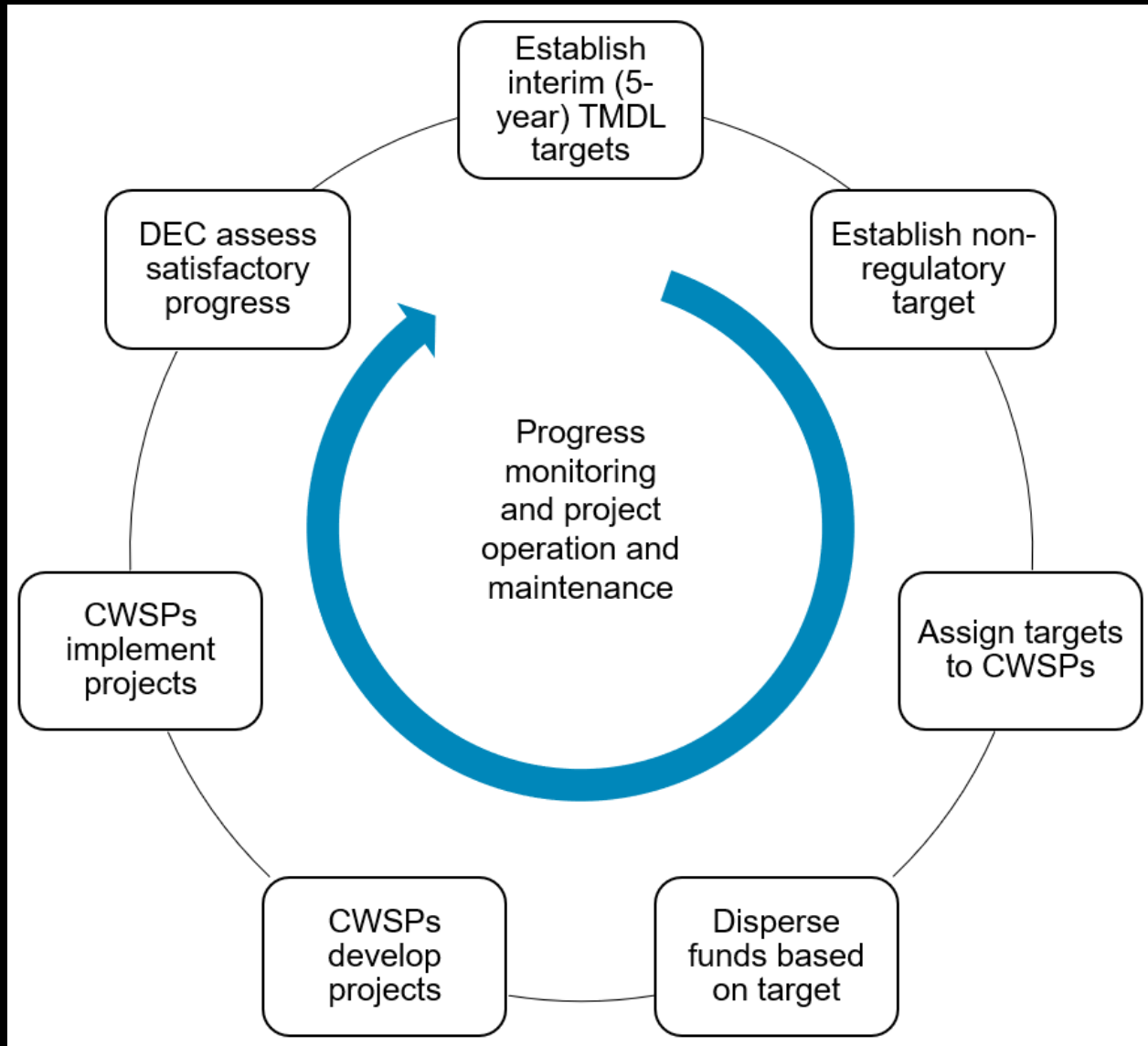
Present



Future



Future: Act 76, Target Setting, Phase 3



Future Clean Water Service Delivery?



Act 76 – the Clean Water Service Delivery of 2019:

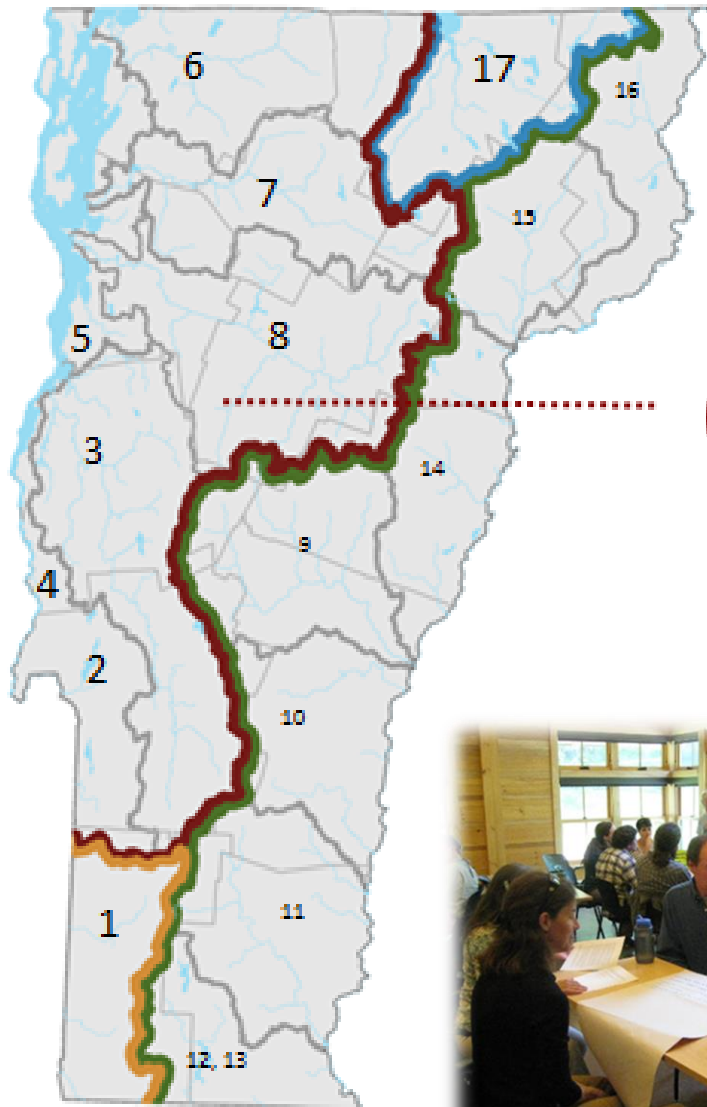
<https://dec.vermont.gov/water-investment/statutes-rules-policies/act-76>



Clean Water Service Delivery Act of 2019

- Long-term funding source for the CWF
- Prioritizes CWF support to Non-Regulatory Programs
- *Establishment of a network of decentralized Clean Water Service Providers* (this proposed Rule)
- Establishment of four consistent grant programs

Act 76 establishes Clean Water Service Providers, Basin Water Quality Councils



• Clean Water Service Providers

- Establish Basin Water Quality Councils
- In coordination with these Councils, identify, develop, construct, verify, inspect, operate, and maintain clean water projects
- Ensure consistency with the applicable Tactical Basin Plan, and consider the pollution reduction value and co-benefits provided by the project, and operation, and maintenance of the project
- Defined terms of service, and criteria for renewal

• Basin Water Quality Councils

- Councils provide localized water quality knowledge to establish policy and make decisions for the CWSP regarding the most significant water quality impairments that exist in the basin
- Councils prioritize the projects that will address those impairments based on the basin plan
- Councils participate in the basin planning process

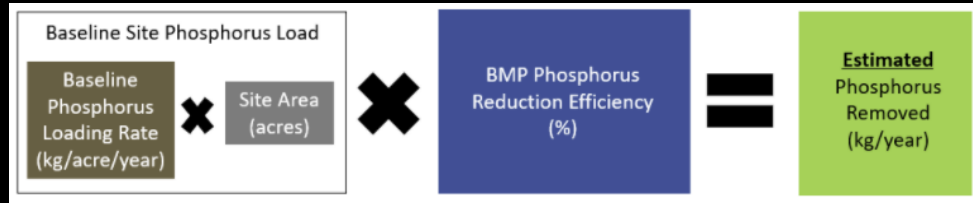
Future: Target Setting in TBPs (for TMDLs)



- Specific – geographically targeted and sector-specific
- Measureable – quantifiable reductions, qualitative indicators & outcomes
- Achievable – resources exist (programs) technical assistance and funding, staff, etc
- Relevant – appropriate workplan to achieve the target(s) that are set
- Timely – 5-year increments over a 20-year TMDL lifespan

Future: TMDL Progress Tracking & Accounting

CWIP currently "tracks" BMP implementation with numerous state and federal agencies to develop and implement tracking and accounting methodologies for clean water projects.



<https://dec.vermont.gov/water-investment/cwi/projects/tracking-accounting>

- Reporting: Program level (BMP accounting) by sector. By project type
- Tracking: BMP (quantitative values)

- What? Where?
- How much pollution reduction?
- How long? Life expectancy

- Operation & Maintenance



- Accounting

- Regulatory program implementation/ compliance (RAPs, AMPs)
- By sector (e.g., SW developed), by basin/ sub-basin
- Determine portion of target per sector per non-regulatory efforts

- Assess Progress, Reset Targets (every 5 years)

- TMDL Accounting & Target Setting – Phase III of TBPs



Giorgetti Park Bio-infiltration Basin – Rutland City (Photo: Nanci McGuire)

Estimated TMDL Baseline Watershed TP Loading (kg/yr)

- ☐ Select All
- ▶

☐ Basin 2 & 4 - Poultney, Mettawee, South Lake Champlain
- ▶

☐ Basin 3 - Otter, Lewis, Little Otter
- ▶

☐ Basin 5 - Northern Lake Champlain Direct
- ▶

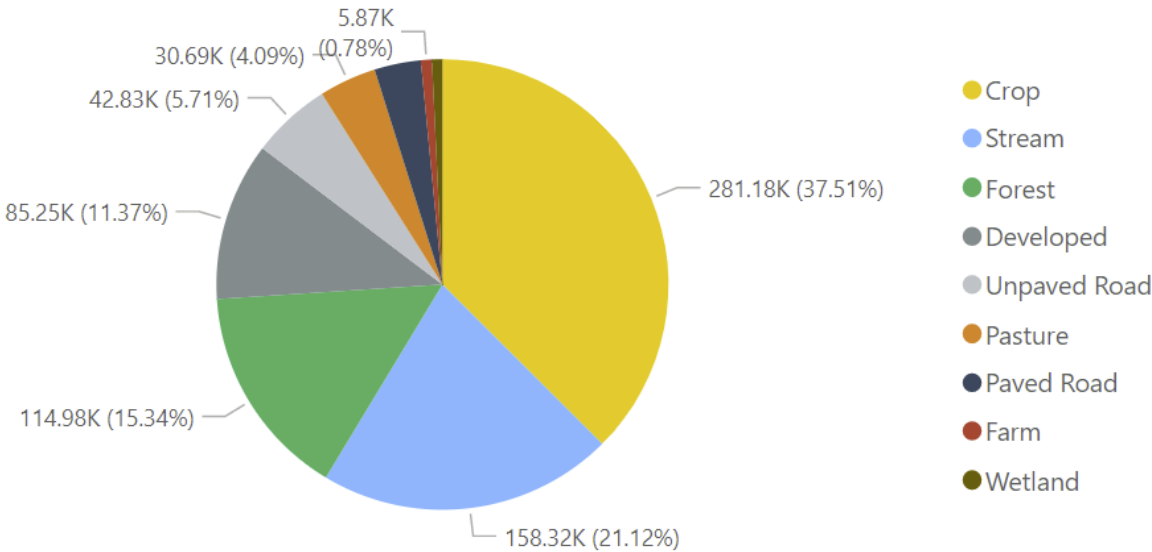
☐ Basin 6 - Missisquoi, Rock, Pike
- ▶

☐ Basin 7 - Lamoille
- ▶

☐ Basin 8 - Winooski

- ☒ Select all
- ☒ Crop
- ☒ Developed
- ☒ Farm
- ☒ Forest
- ☒ Pasture
- ☒ Paved Road
- ☒ Stream
- ☒ Unpaved Road
- ☒ Wetland

Watershed TP Load (kg/yr)



BasinPlan	Crop	Developed	Farm	Forest	Pasture	Paved Road	Stream	Unpaved Road	Wetland	Total
Basin 2 & 4 - Poultney, Mettawee, South Lake Champlain	47,298	7,975	847	14,845	6,327	2,230	10,052	4,607	1,358	95,539
Basin 3 - Otter, Lewis, Little Otter	95,780	19,159	1,835	26,627	7,396	5,529	35,695	9,211	2,430	203,661
Basin 5 - Northern Lake Champlain Direct	35,385	12,276	565	2,775	4,584	3,498	2,893	2,315	1,299	65,591
Basin 6 - Missisquoi, Rock, Pike	53,168	11,460	1,318	22,829	6,148	3,728	44,810	6,366	377	150,205
Basin 7 - Lamoille	23,275	11,032	584	9,823	2,792	3,246	7,301	7,669	70	65,793
Basin 8 - Winooski	26,275	23,345	722	38,084	3,441	6,725	57,572	12,663	33	168,859
Total	281,182	85,247	5,871	114,983	30,688	24,957	158,322	42,832	5,566	749,648

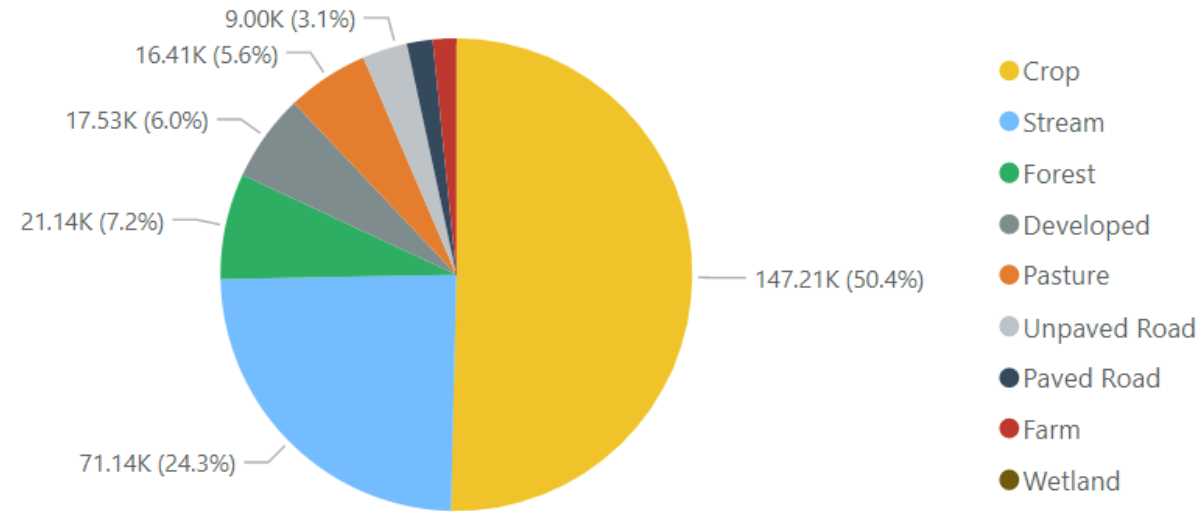
Estimated TMDL TP Target Reduction (kg/yr)



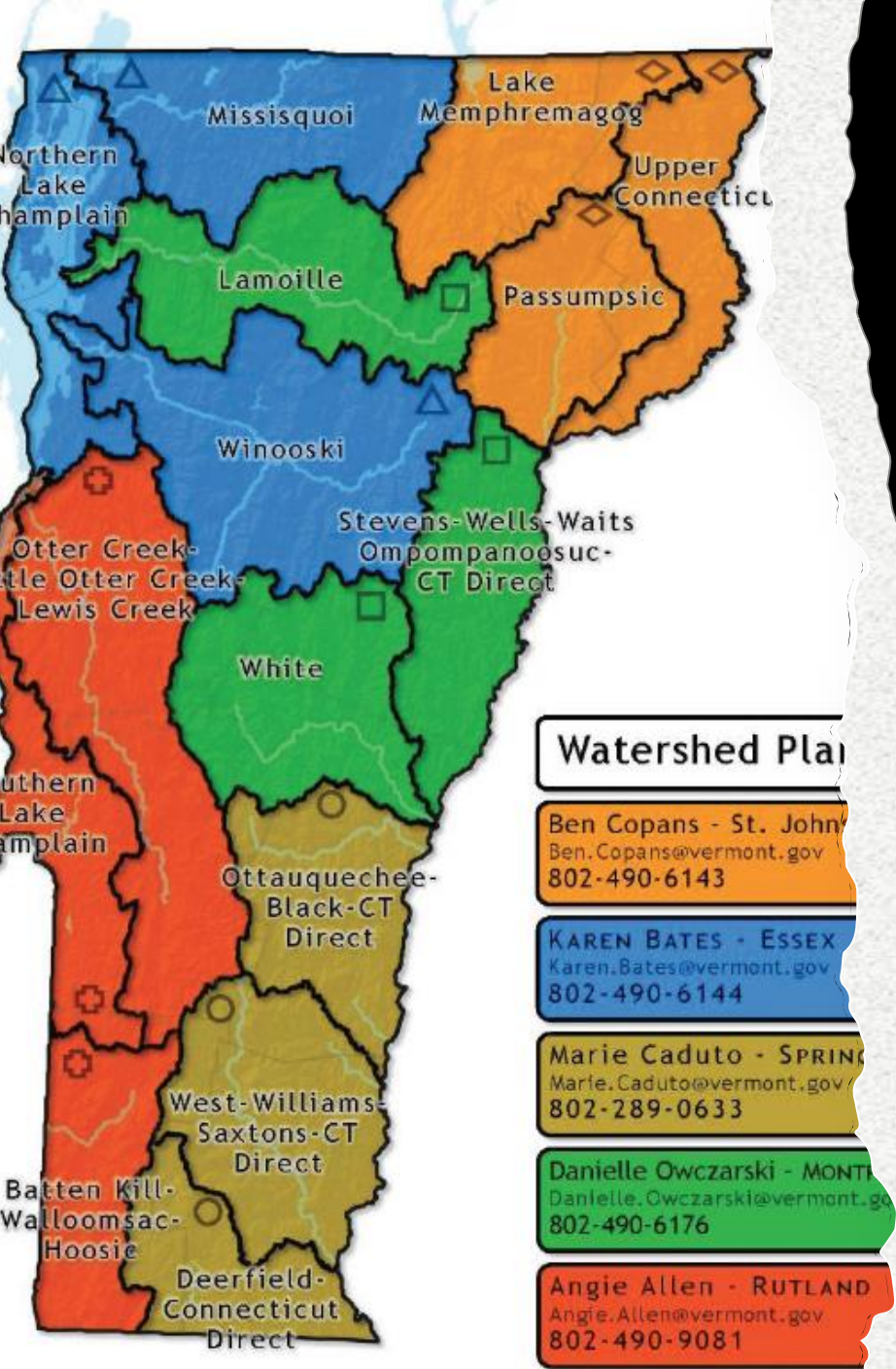
- ☐ Select All
- ☒ Basin 2 & 4 - Poultney, Mettawee, South Lake Champlain
- ☒ Basin 3 - Otter, Lewis, Little Otter
- ☒ Basin 5 - Northern Lake Champlain Direct
- ☒ Basin 6 - Missisquoi, Rock, Pike
- ☒ Basin 7 - Lamoille
- ☒ Basin 8 - Winooski

Watershed TP Reduction (kg/yr)

- ☒ Select all
- ☒ Crop
- ☒ Developed
- ☒ Farm
- ☒ Forest
- ☒ Pasture
- ☒ Paved Road
- ☒ Stream
- ☒ Unpaved Road
- ☒ Wetland



BasinPlan	Crop	Developed	Farm	Forest	Pasture	Paved Road	Stream	Unpaved Road	Wetland	Total
Basin 2 & 4 - Poultney, Mettawee, South Lake Champlain	29,751	1,626	677	5,860	3,980	442	4,694	931	0	47,960
Basin 3 - Otter, Lewis, Little Otter	44,921	2,874	1,468	1,331	3,469	829	14,314	1,382	0	70,587
Basin 5 - Northern Lake Champlain Direct	9,531	2,135	452	137	1,461	588	1,516	385	0	16,207
Basin 6 - Missisquoi, Rock, Pike	44,023	3,919	1,055	11,415	5,091	1,275	30,695	2,177	0	99,649
Basin 7 - Lamoille	6,657	2,262	467	491	798	665	3,278	1,572	0	16,191
Basin 8 - Winooski	12,323	4,716	577	1,904	1,614	1,358	16,638	2,558	0	41,689
Total	147,205	17,532	4,697	21,139	16,413	5,158	71,135	9,004	0	292,284



Contacts for Watershed Planning

<https://dec.vermont.gov/water-investment/watershed>

[Tactical Basin Planning Storymap](#)

Keeping Vermont's Watersheds Healthy

The Vermont Tactical Basin Planning Process

Agency of Natural Resources | February 2, 2021

Ben Copans – Supervising Planner

Ben.Copans@vermont.gov

802-490-6143

Ethan Swift – Program Manager

Ethan.Swift@vermont.gov

802-490-6141